MISSOURI BOTANICAL GARDEN

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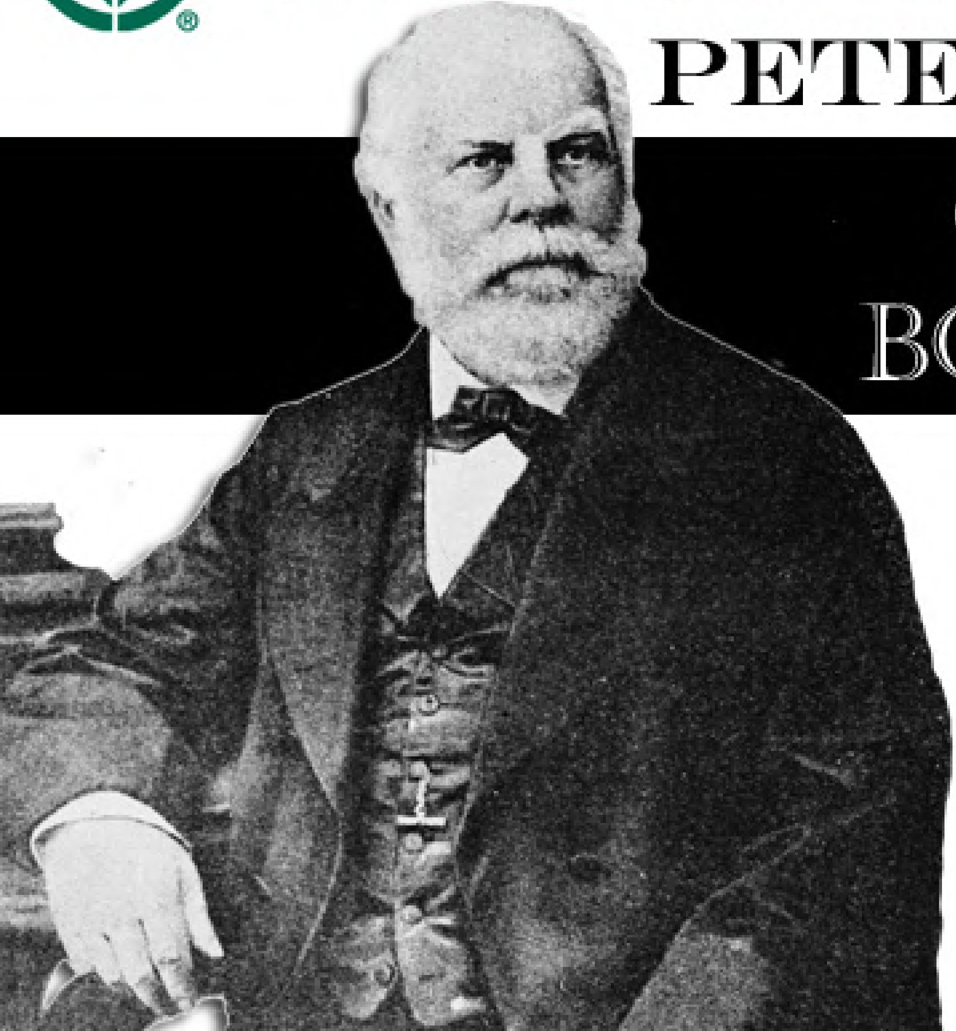
# GEORGE ENGELMANN BOTANICAL NOTEBOOKS

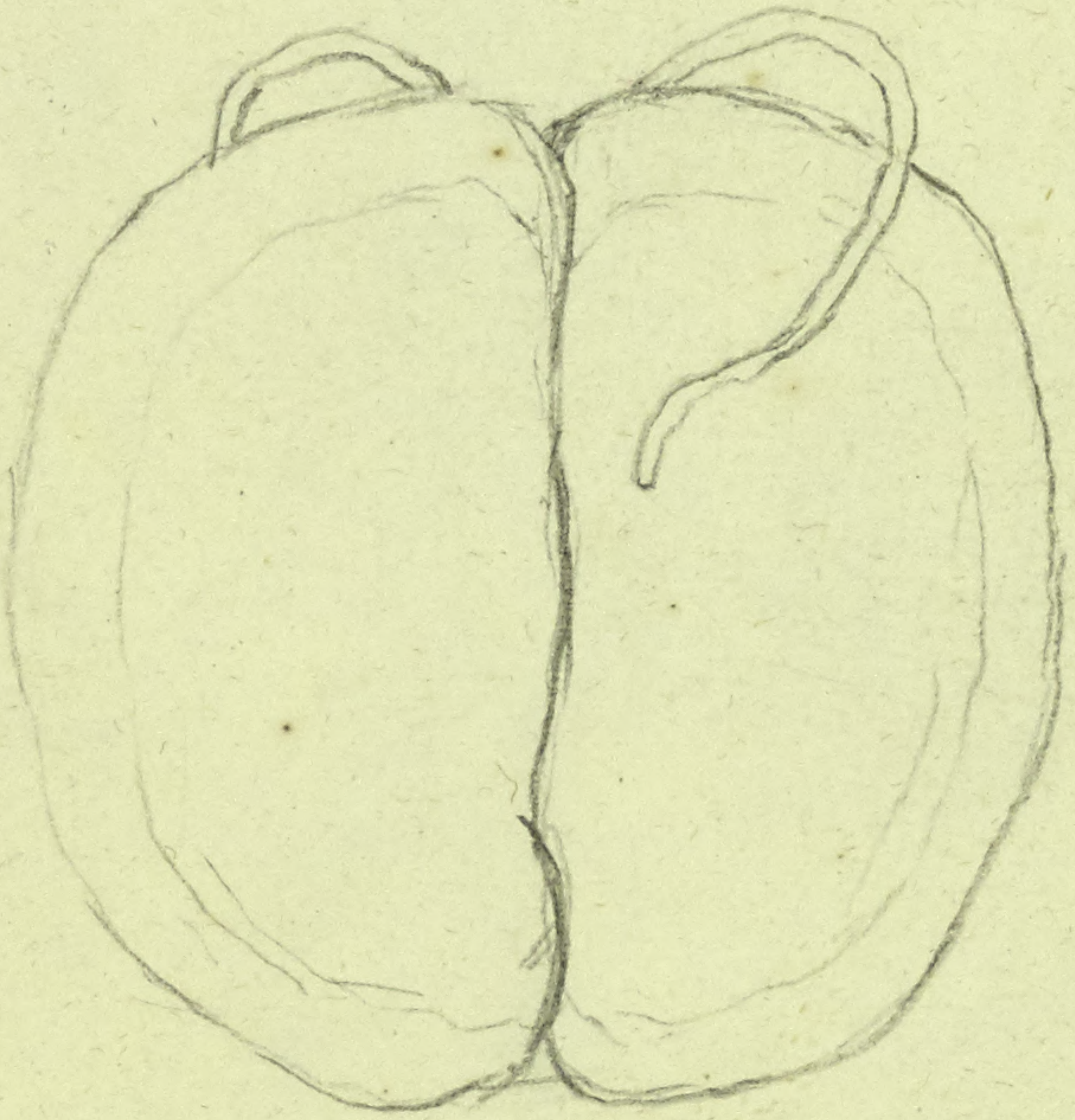


Pagination Note:
Since many of the items lack a specific page number, the page number displayed online refers to the sequentially created number each item was given upon cataloging the materials.

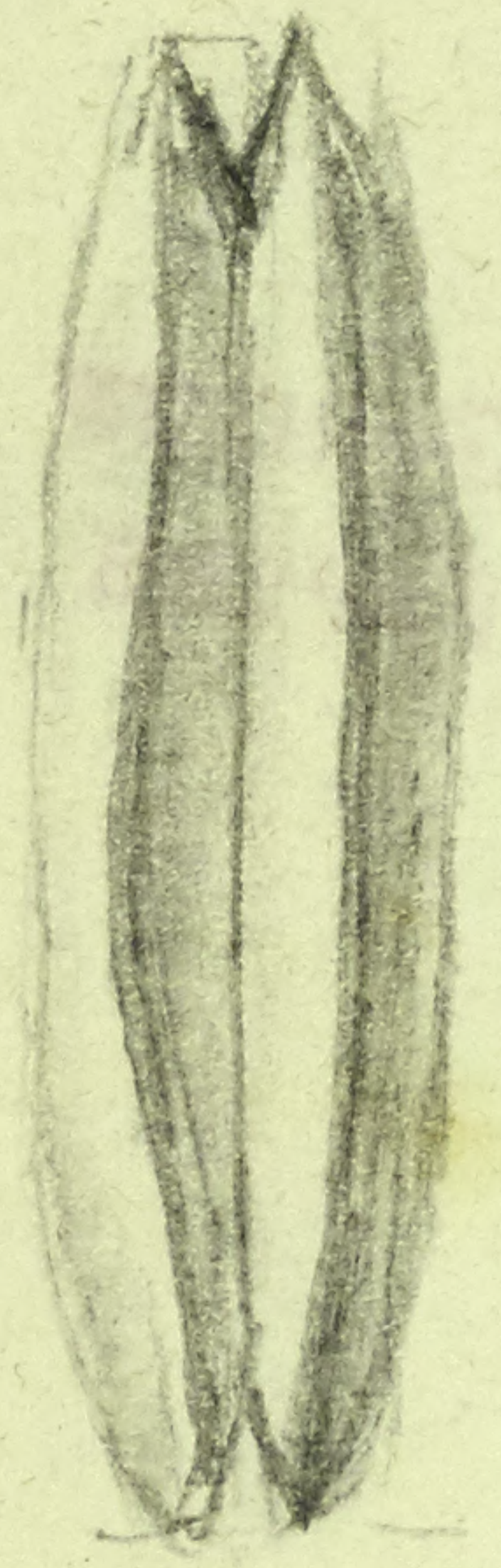
Callitr. stagnalis var microphylla
Kützing in Hb. H.B. Missouri.

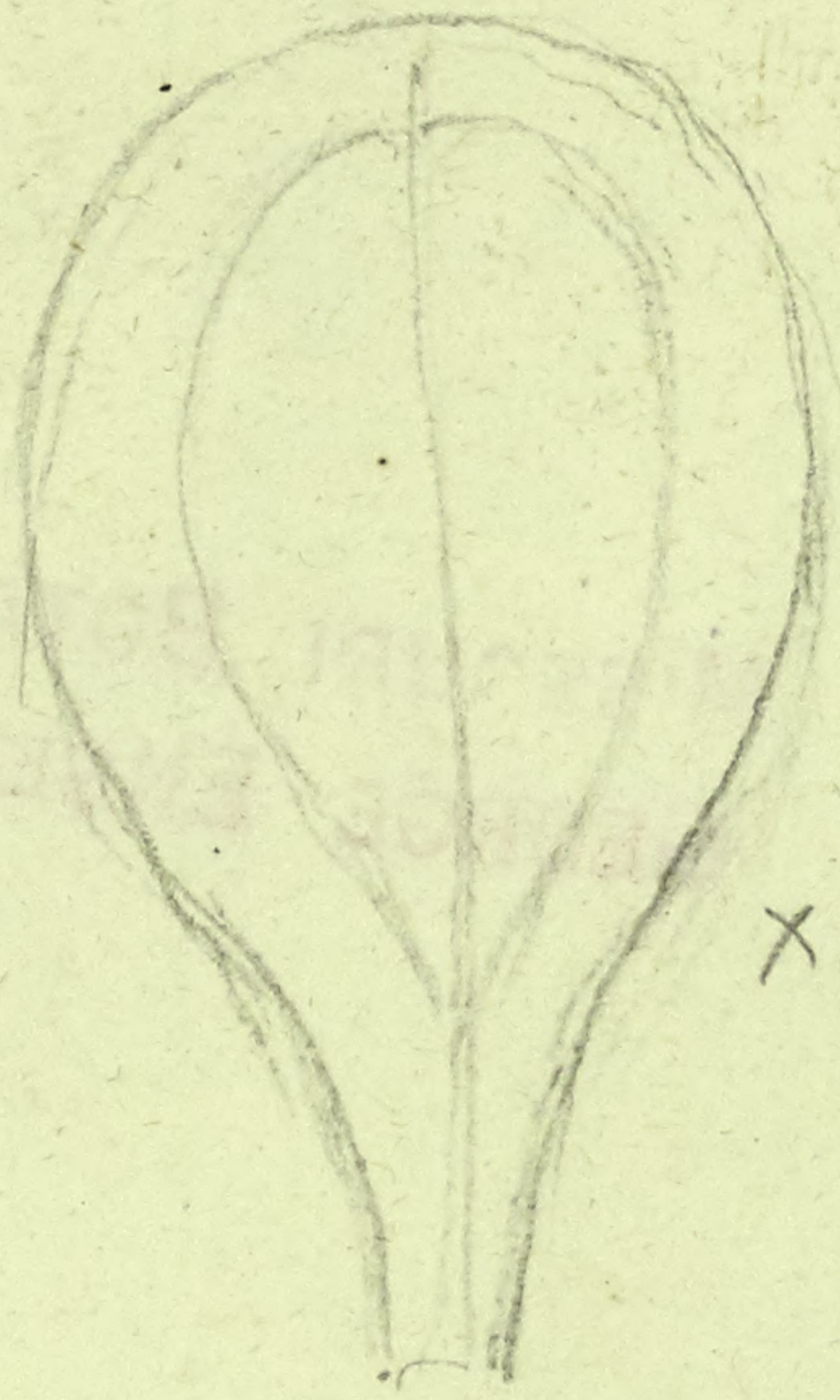
Oct. 27 1869

x 30



1.3 mm diameter

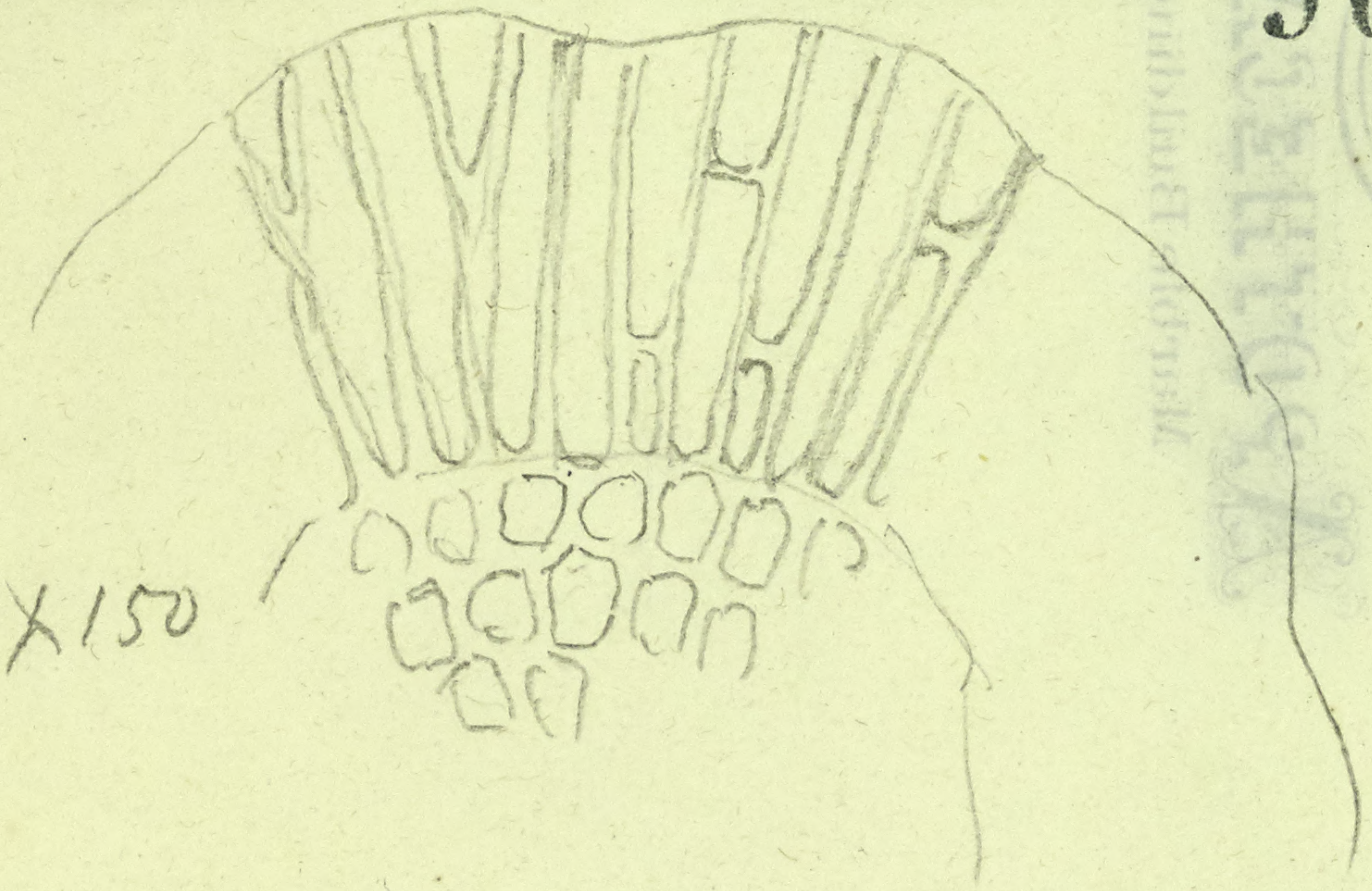




x 10

leaf 2 x 3½ mm

963



x 150

0 1 2 3 4 5 6 7 8 9 10
cm
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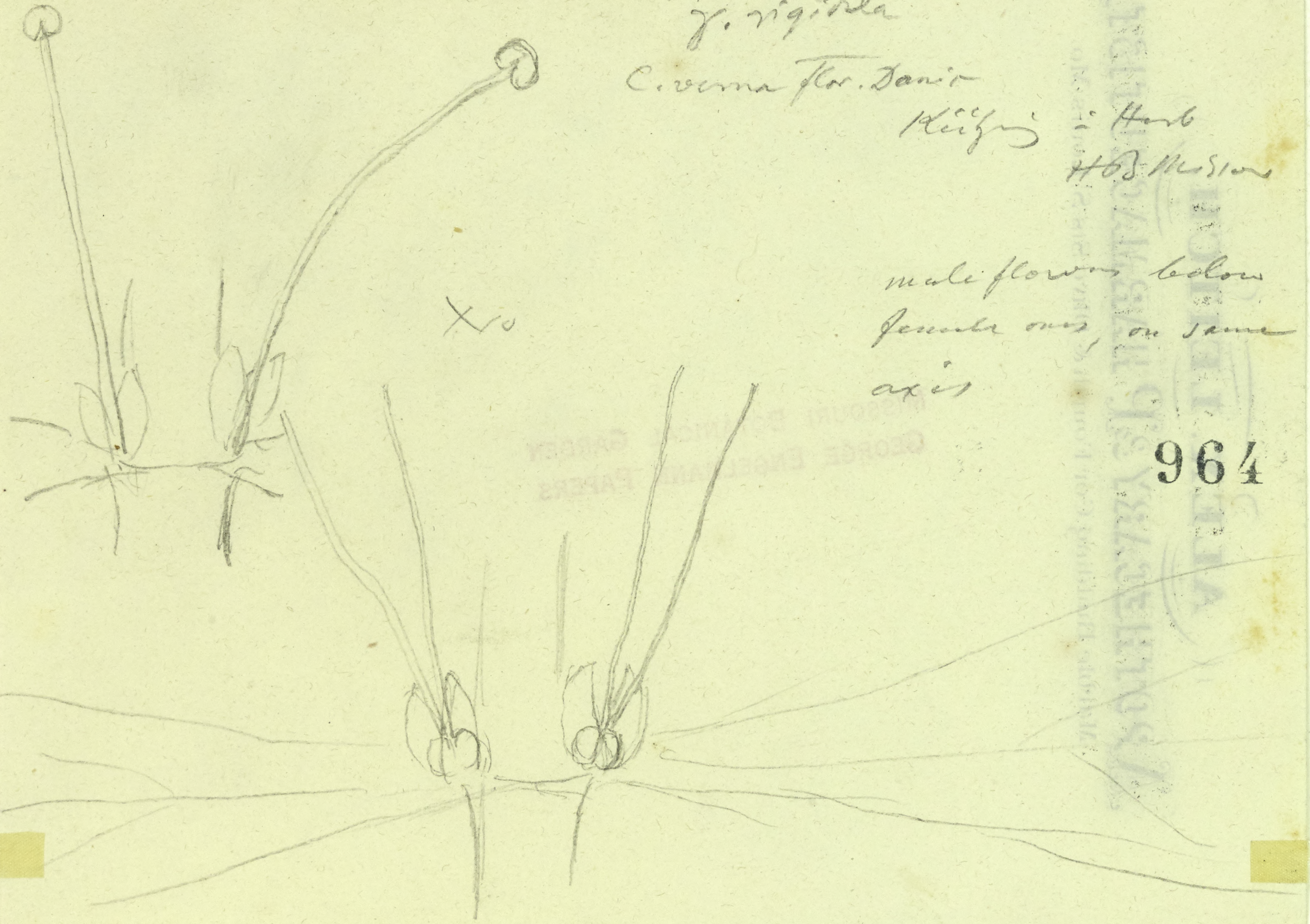
MISSOURI
BOTANICAL
GARDEN

ALEX. LEITCH,
APOTHECARY & PHARMACEUTIST,
Marble Building Cor. Fourth & Olive Sts. St. Louis, Mo.

Callitriche platycarpa Nov 1 1866
γ. rigidula

C. verna Flor. Danic
Kützing in Herb
HB Mission



male flowers below female ones, on same axis

964

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Callitri platycarpa

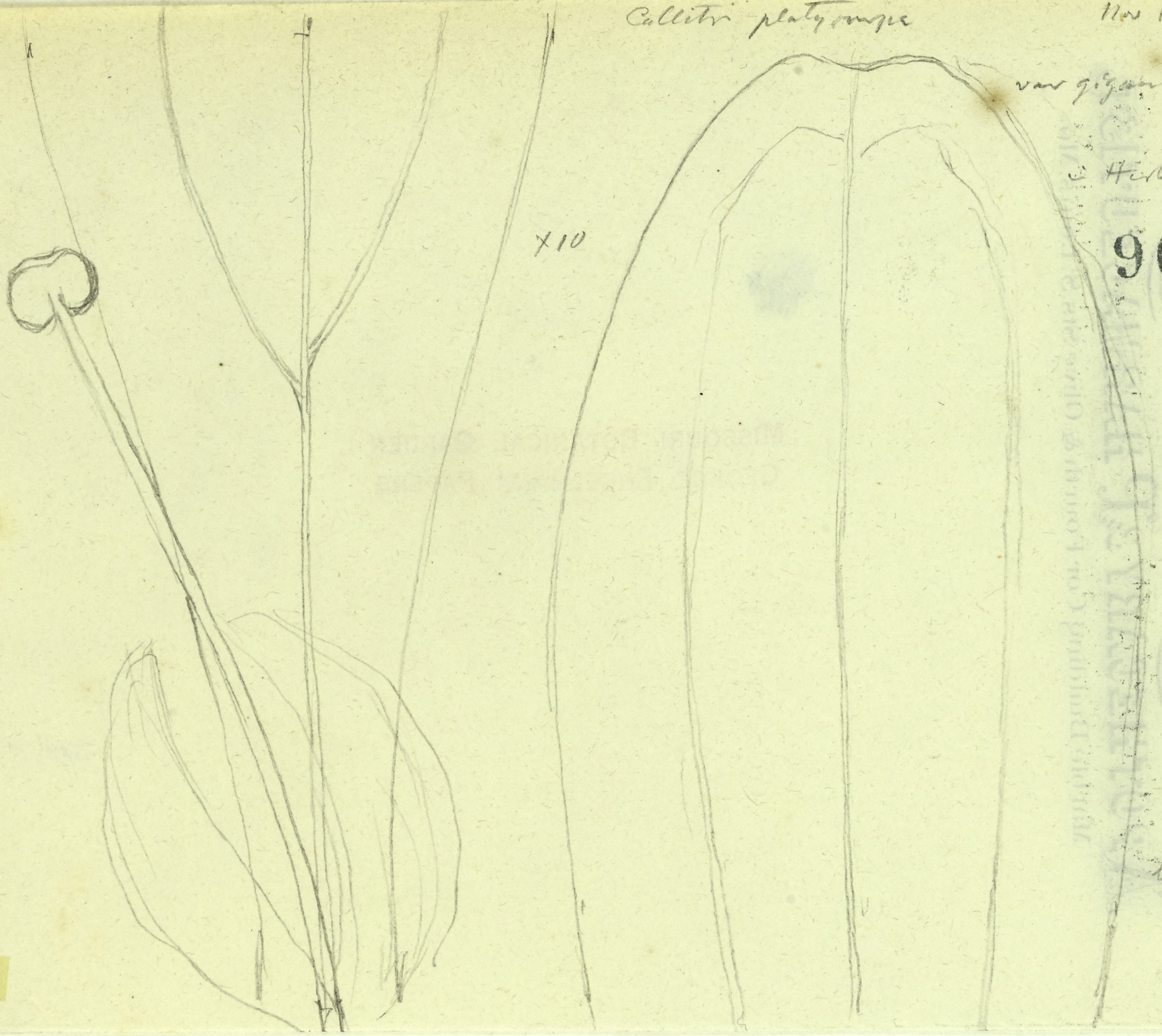
Nov 1 1866

var gigantea

Kützing

ē Herb HBG Miss

965



leaf 20 x 6 mm

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**ALEX. LEITCH,**
**APOTHECARY & PHARMACEUTIST,**
Marble Building Cor. Fourth & Olive Sts. St. Louis, Mo.

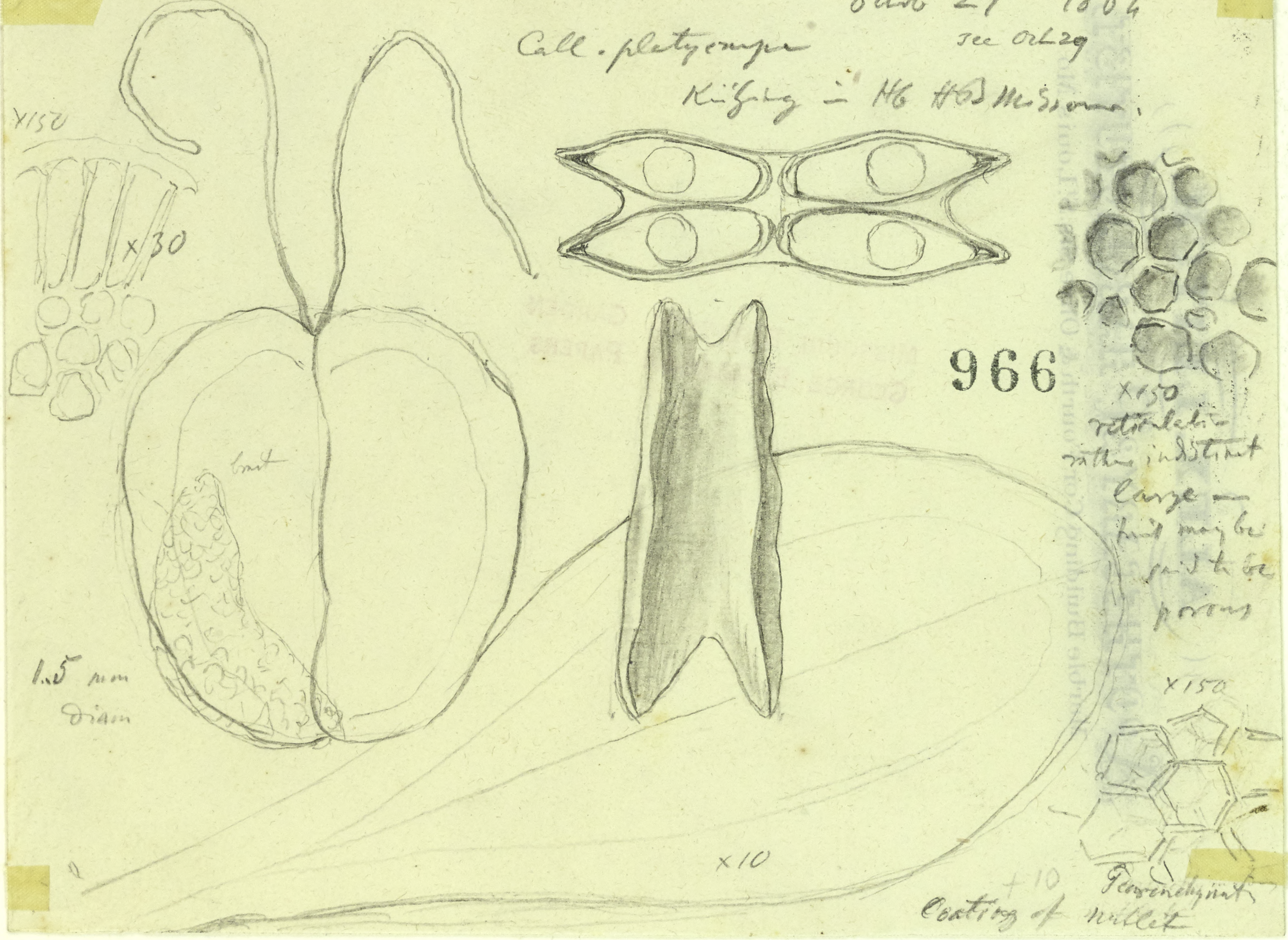
Octob 27 1864

see Oct 29

Call. platycarpa

Kützing — H6 #63 Missouri.

966


x150
x30
fruit
1.5 mm
diam
x150
x150
x10
x10
Parenchymat.

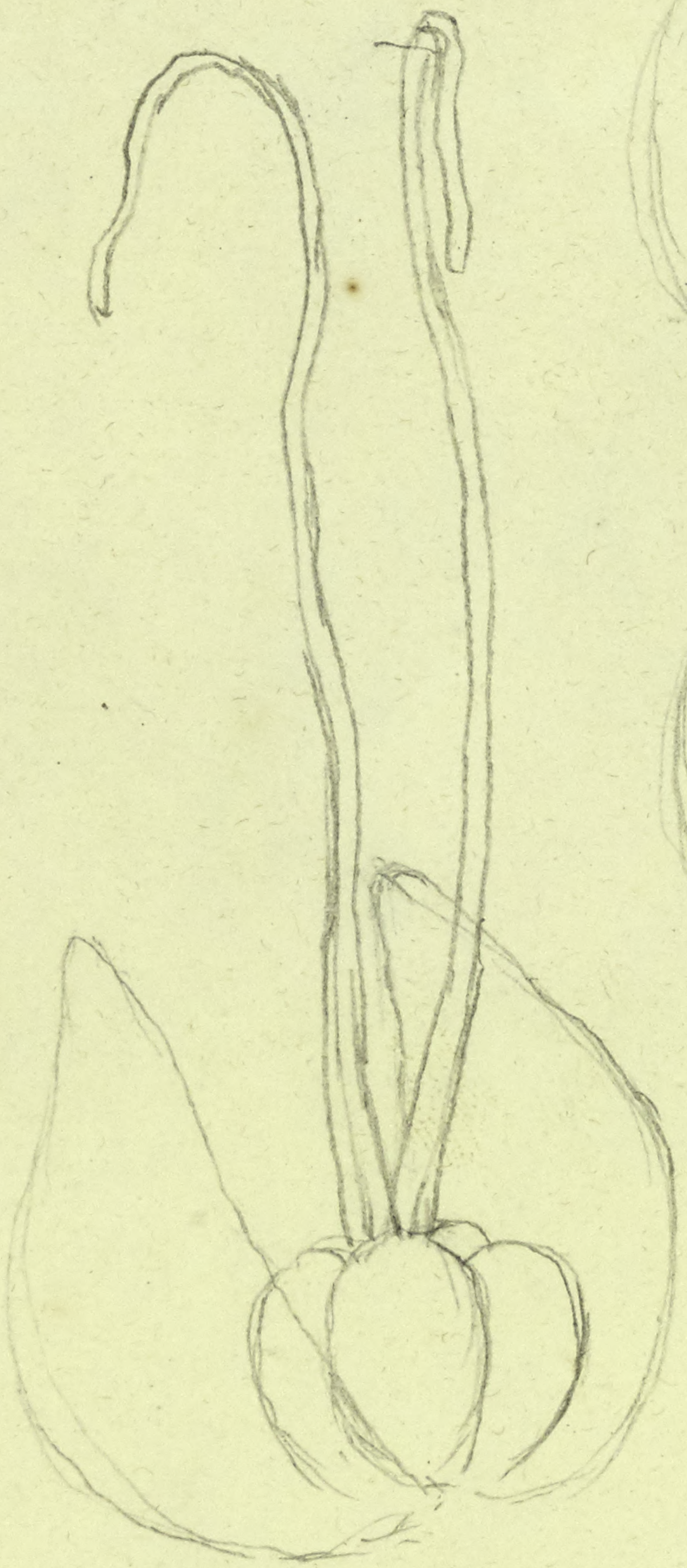
x150 reticulation rather indistinct large — fruit may be said to be porous

Coating of millet

ALEX. LEITCH,
APOTHECARY & PHARMACEUTIST,
Marble Building Cor. Fourth & Olive Sts. St. Louis, Mo.

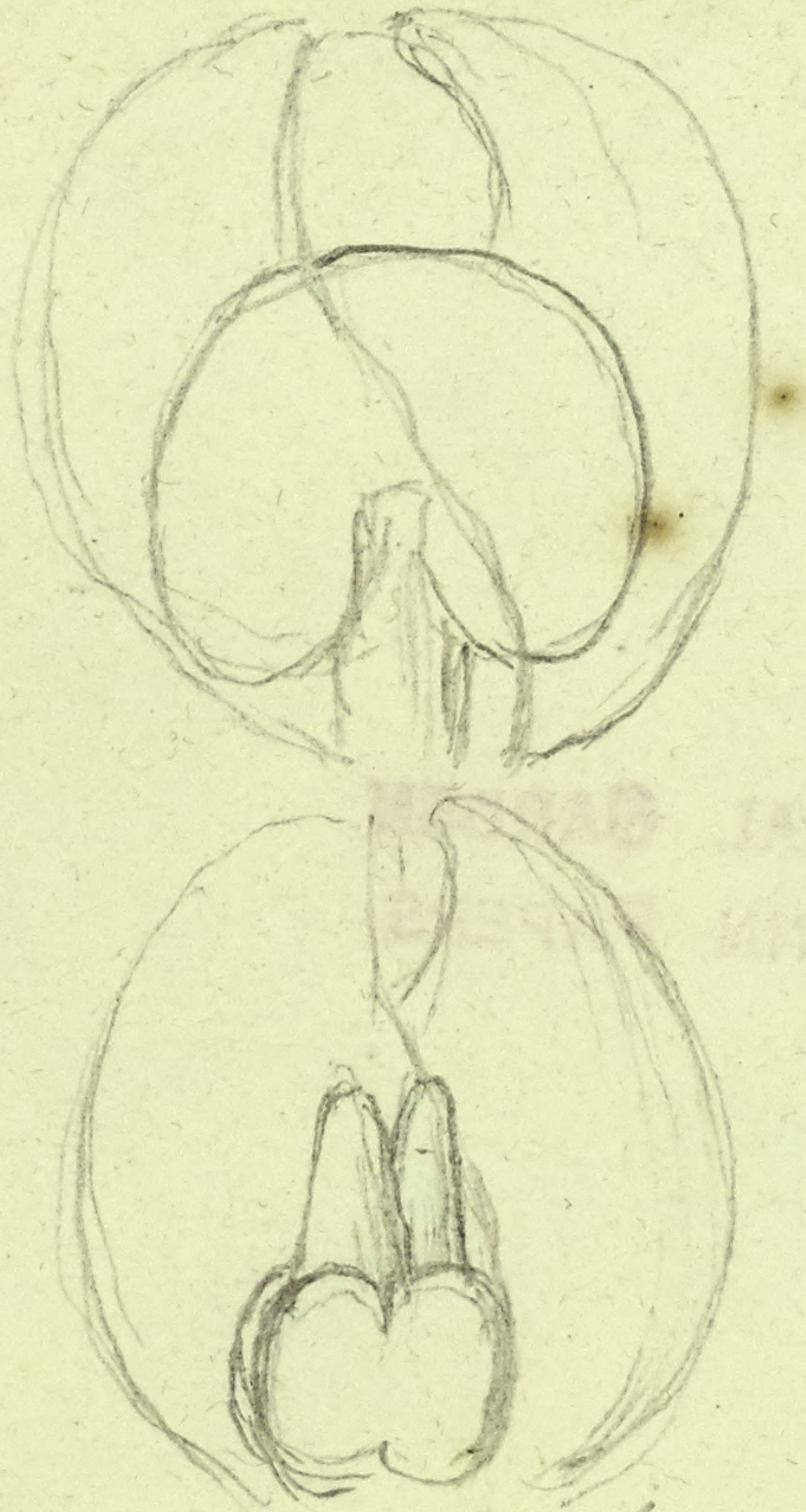
Call platycarpa Kützing Octob 29 1864
in Ho. i HB Mission see Octob 27
var [illegible]

x 30



female flower
& bracts

x 30



very young
male
& female
flowers
long before anthesis

967

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0 1 2 3 4 5 6 7 8 9 10
cm
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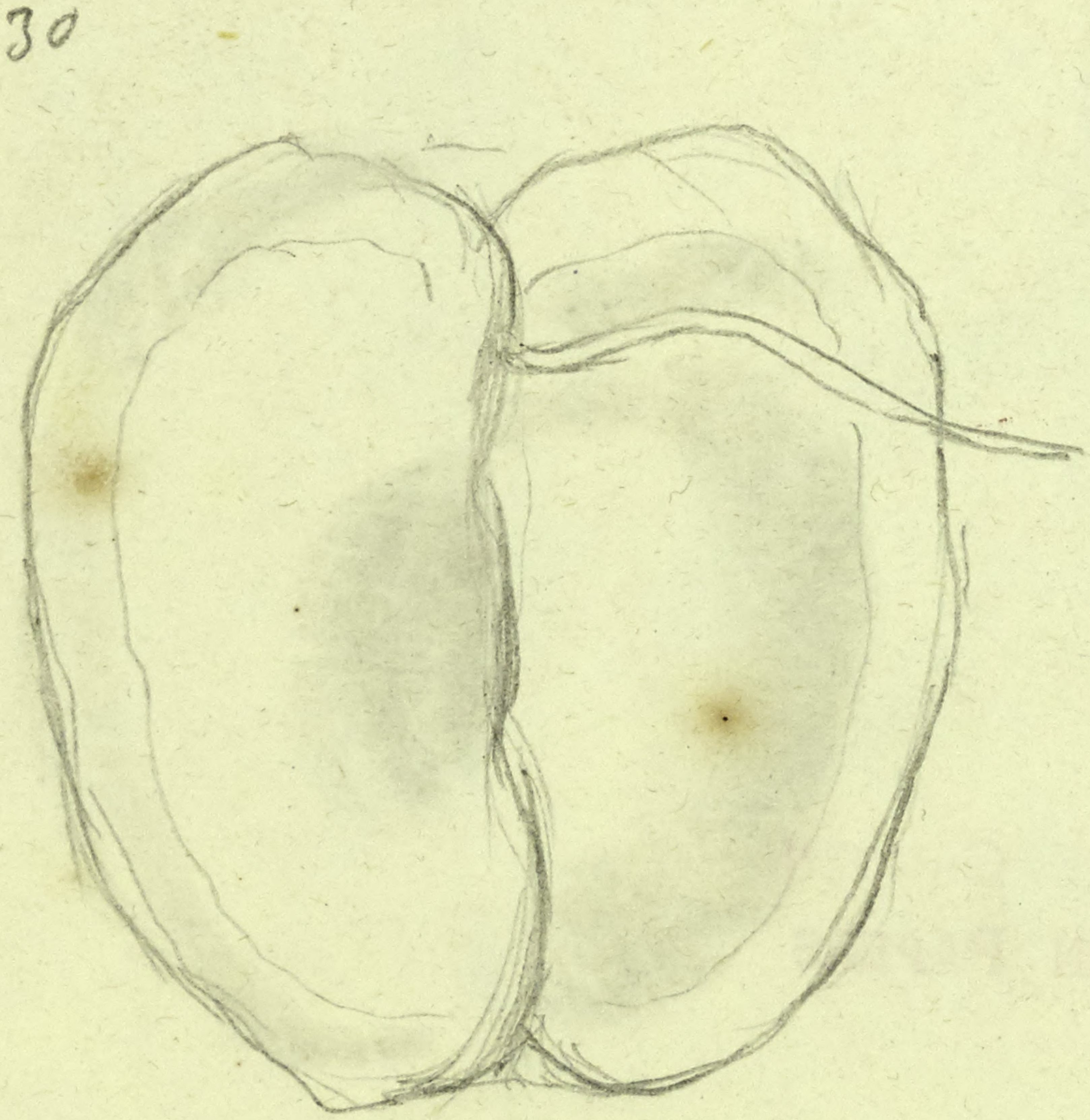
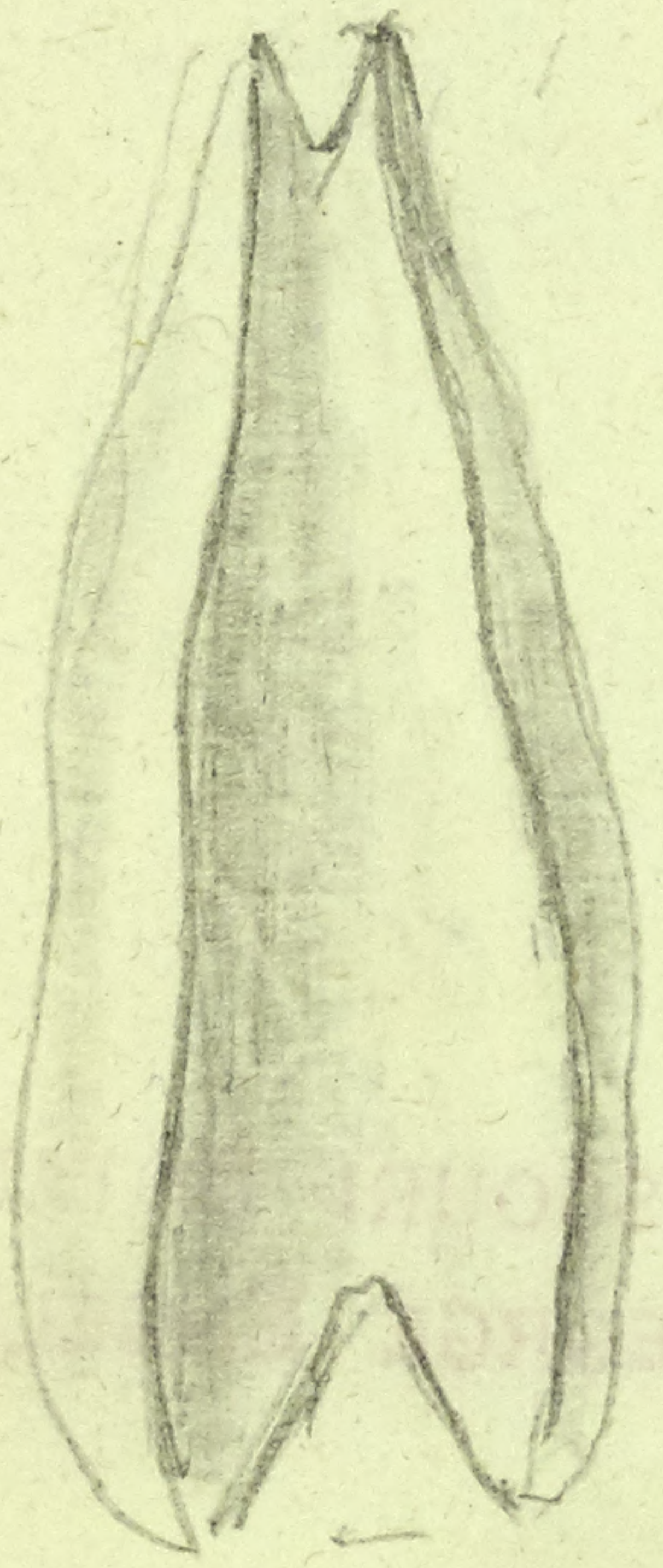
GARDEN

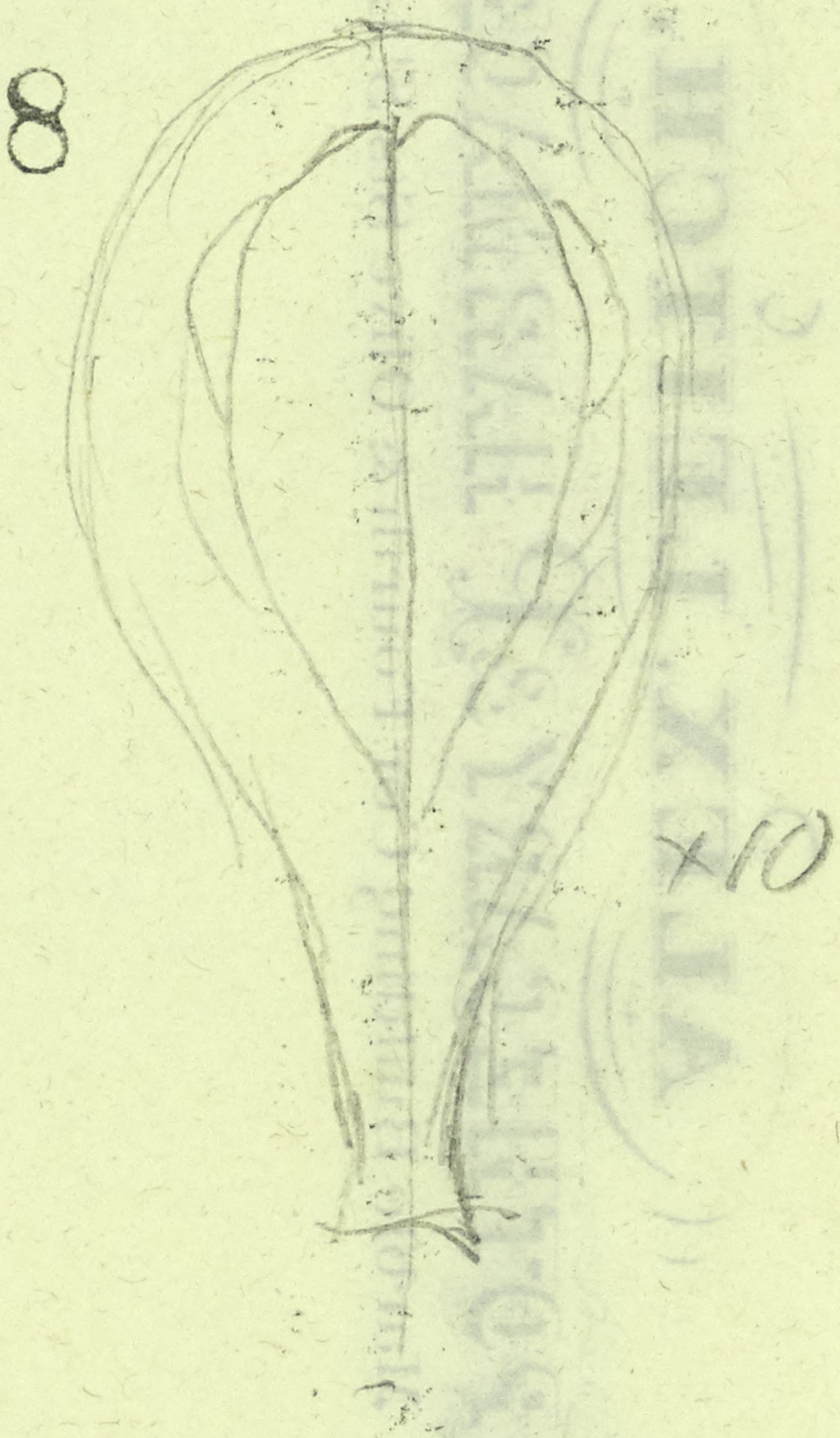
"Callitriche stagnalis Kütz" Nov 1 1864
Smoland. Femsjö". E. P. Fries
= Hb. A. Gray

968



$\frac{44 \times 46}{30}$ = 1.5 mm





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cm
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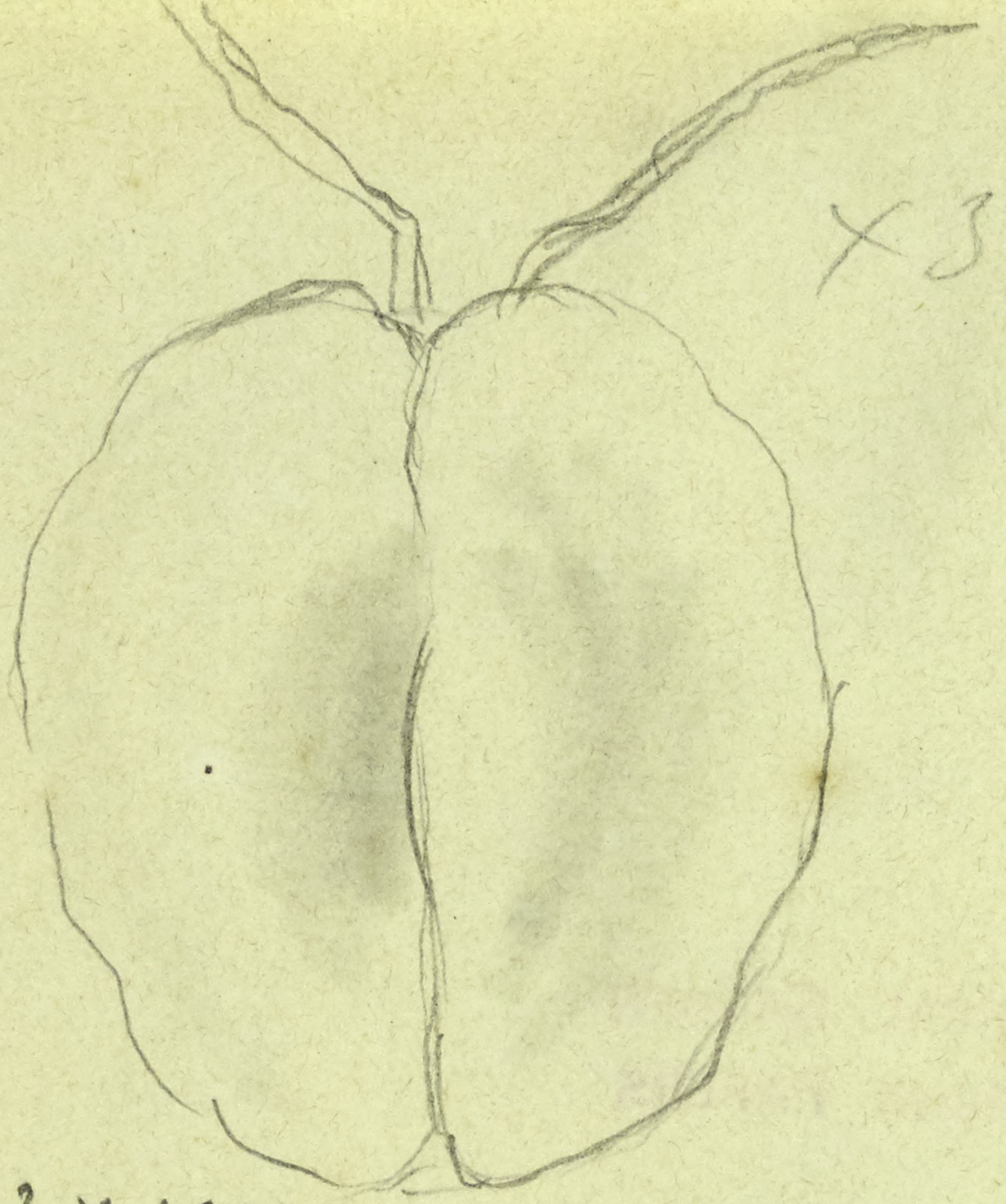
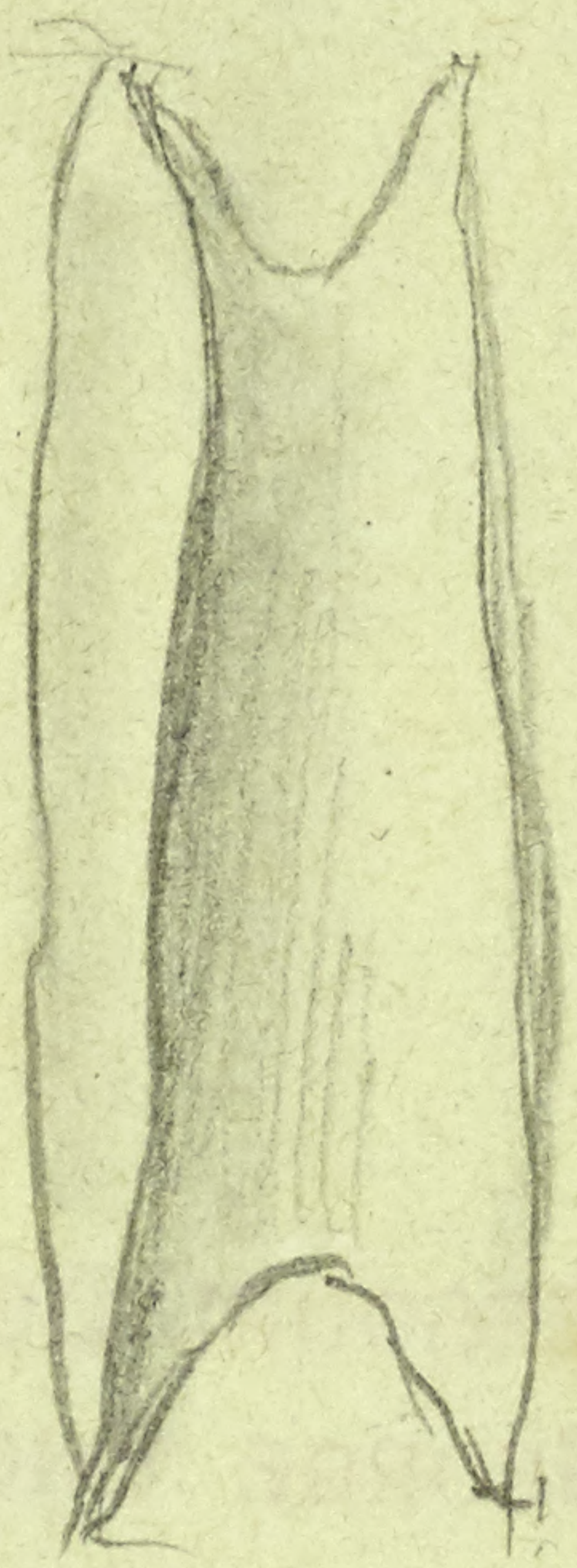
Jy 6 1864

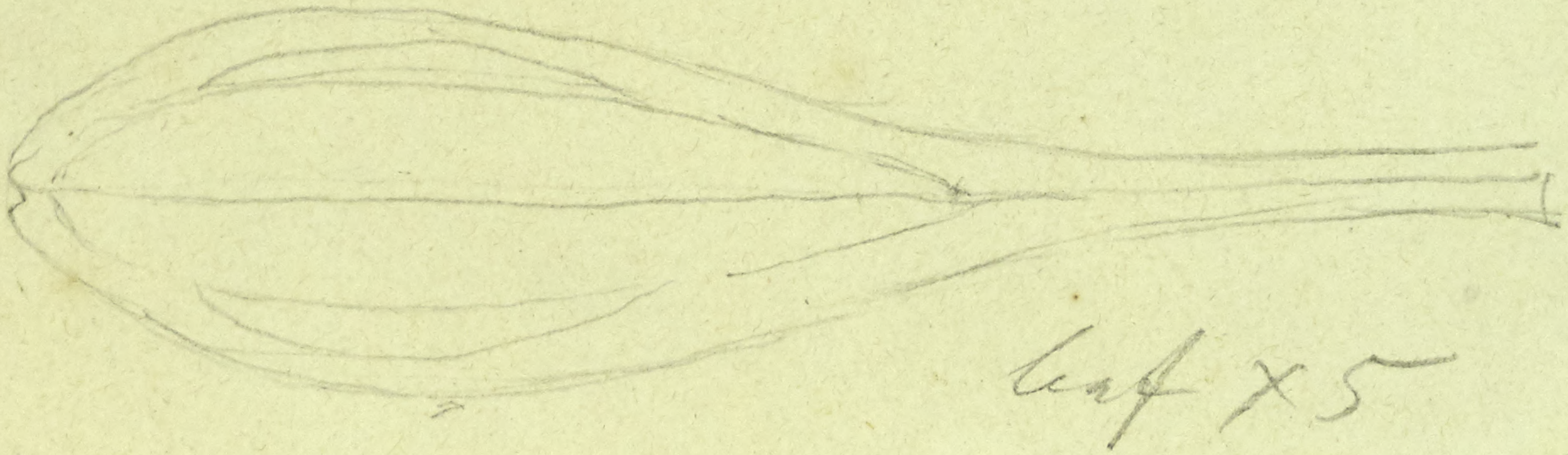




$$\frac{39 \times 44}{30} = 1.3 \times 1.5 \text{ mm}$$

Callitriche stagnalis

Freiberg Th. Hilgard Aug 1861



969

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MISSOURI BOTANICAL GARDEN

ALL THE NEW REMEDIES CONSTANTLY ON HAND

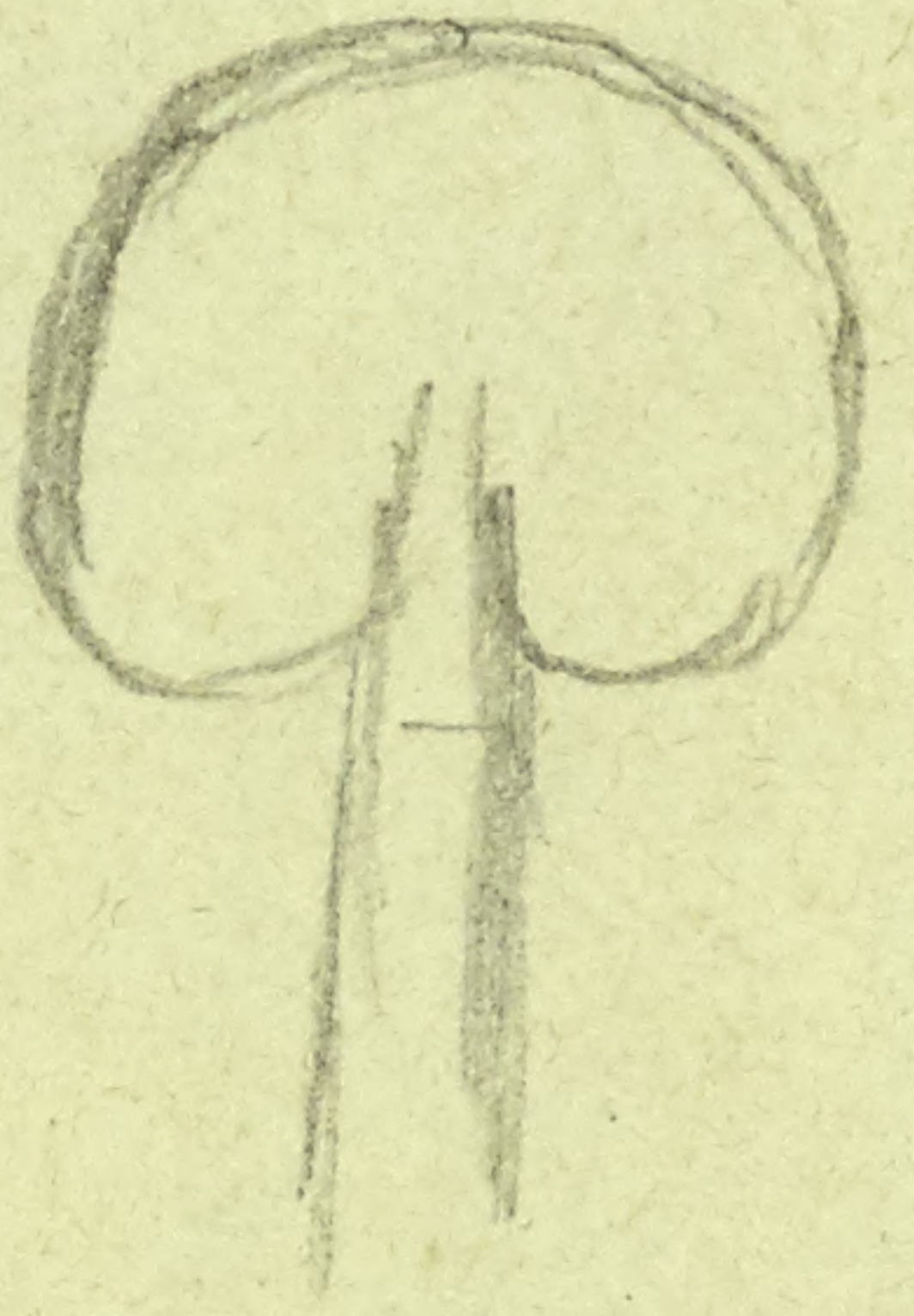
ALEX. LEITCH,
APOTHECARY & CHEMIST,
Cor. 4th and Olive Sts., St. Louis.

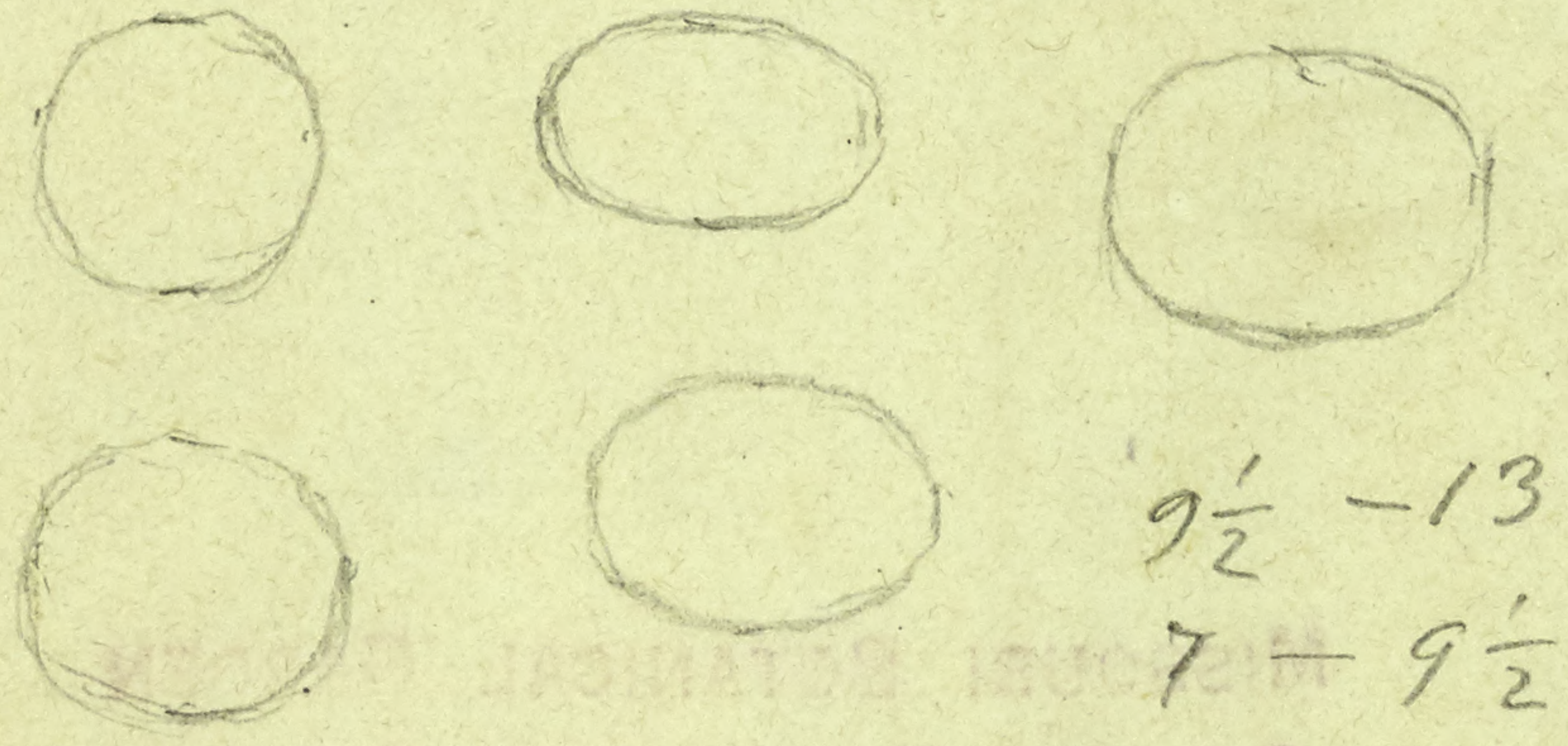
CHEMIST
A

Callitriche stagn? sine fructu June 27 1864

Frankfurt a/M 1825

x 30





Pollen

x 3

i

9½ – 13 mm long diameter

7 – 9½ mm short

Pollen 0.023 – 0.032 mm i longer

0.017 – 0.023 " " i shorter diameter

no fruit seen

970

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BOTANICAL
GARDEN

ALL THE NEW REMEDIES CONSTANTLY ON HAND

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Cor. 4th and Olive Sts., St. Louis.

CHEMIST
A

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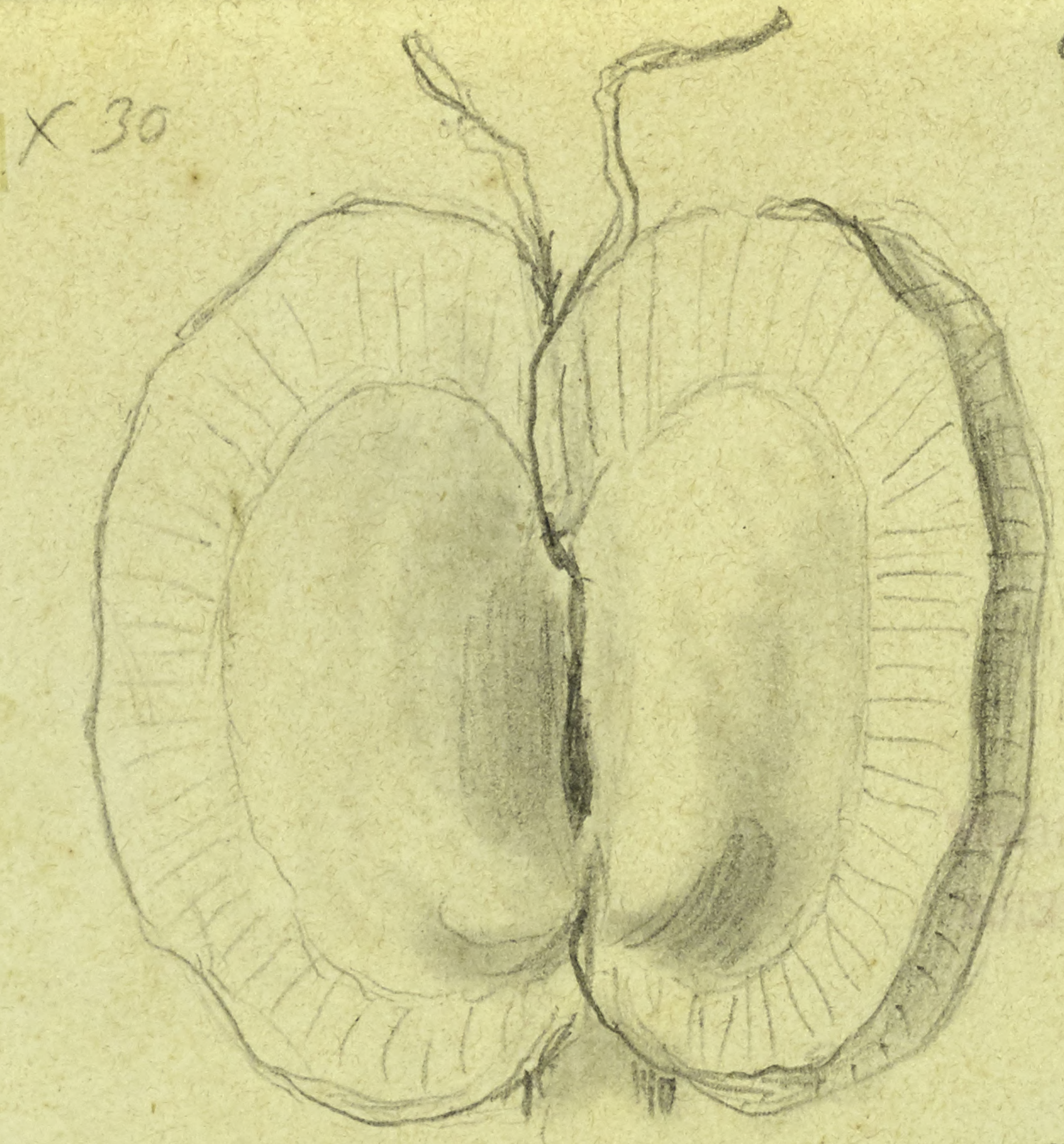
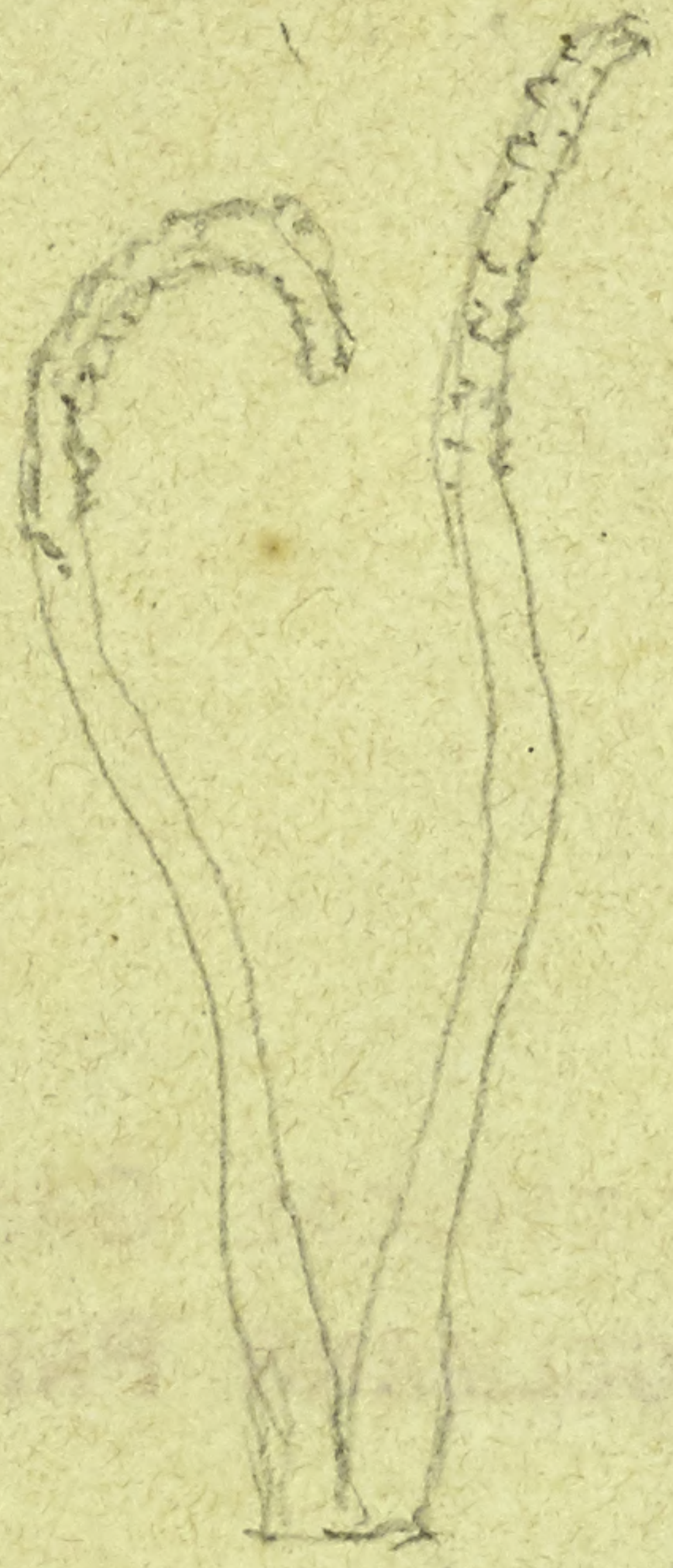
Callitriche stagnalis
Teneriffe

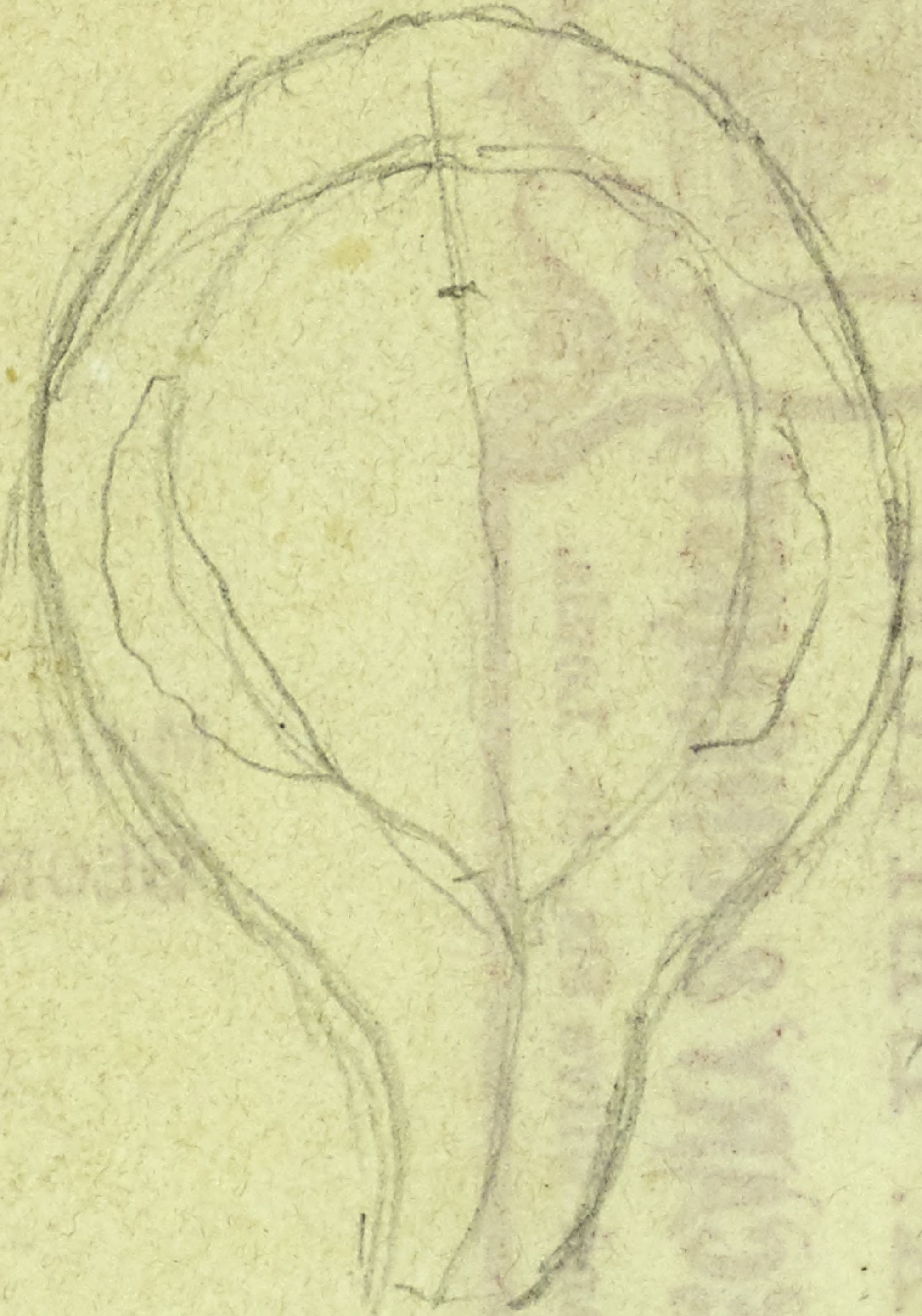
St Louis
June 25 1864

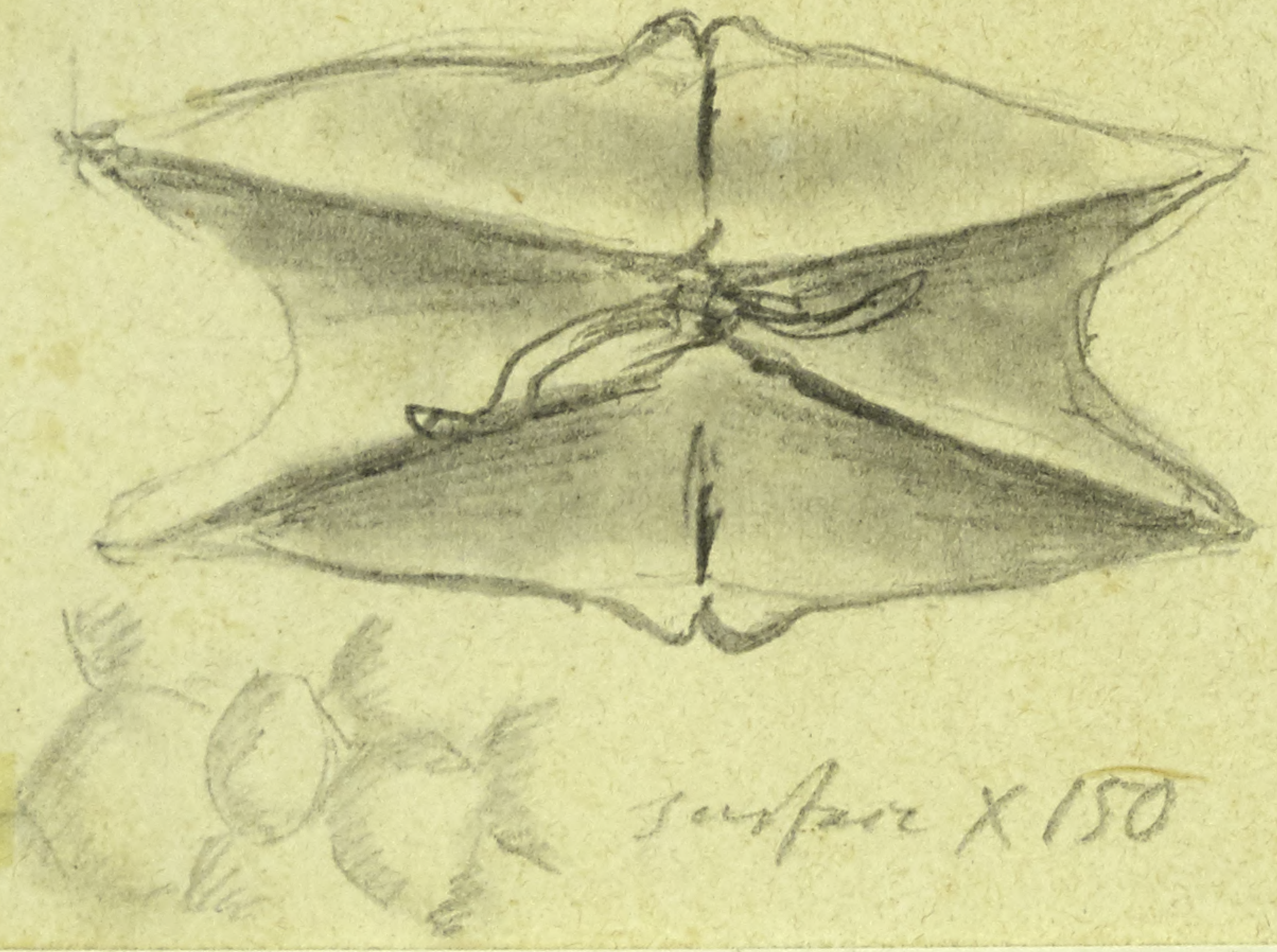


diamet $\frac{46}{30}$ = 1,5 mm

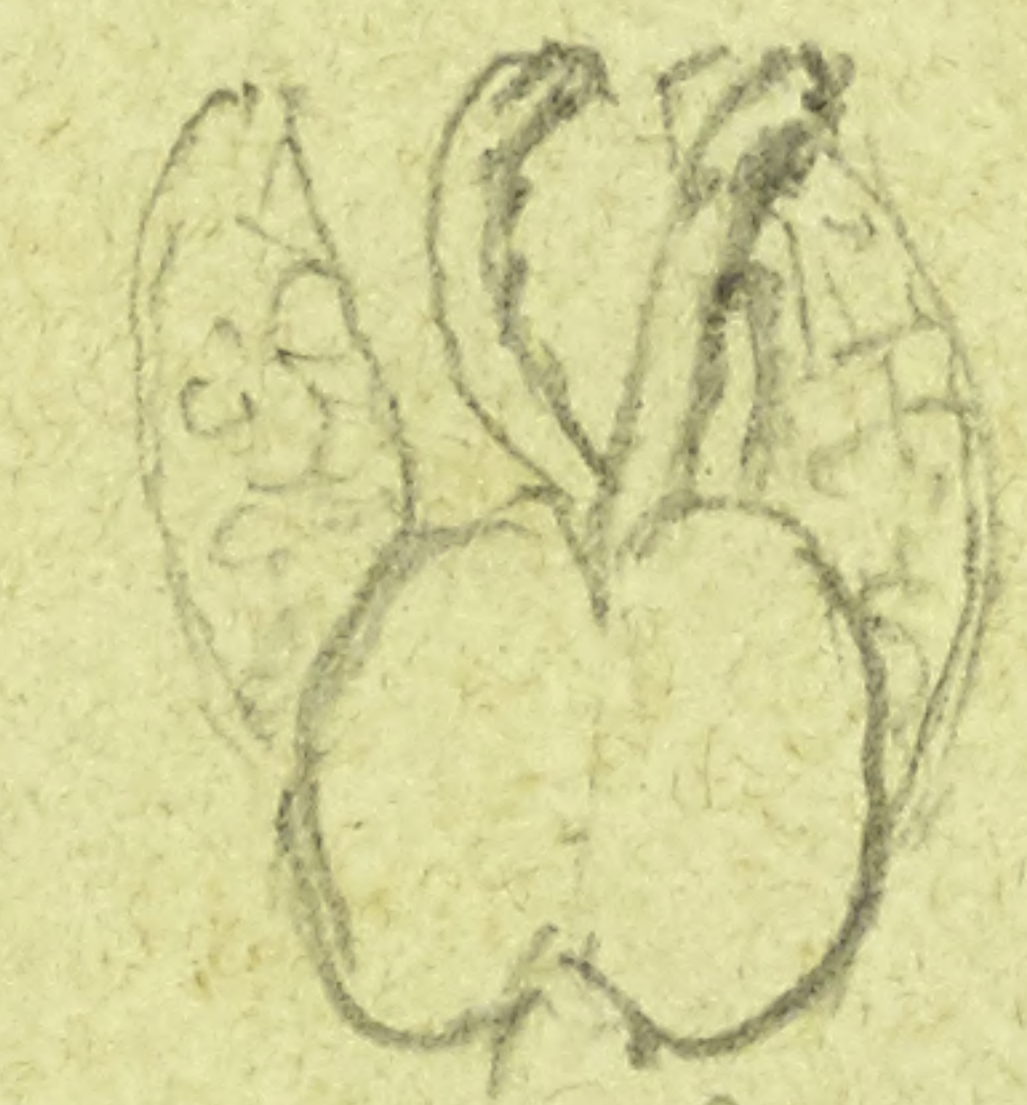


styles of a fruit
soaked — easily
separated from it
remain united at base

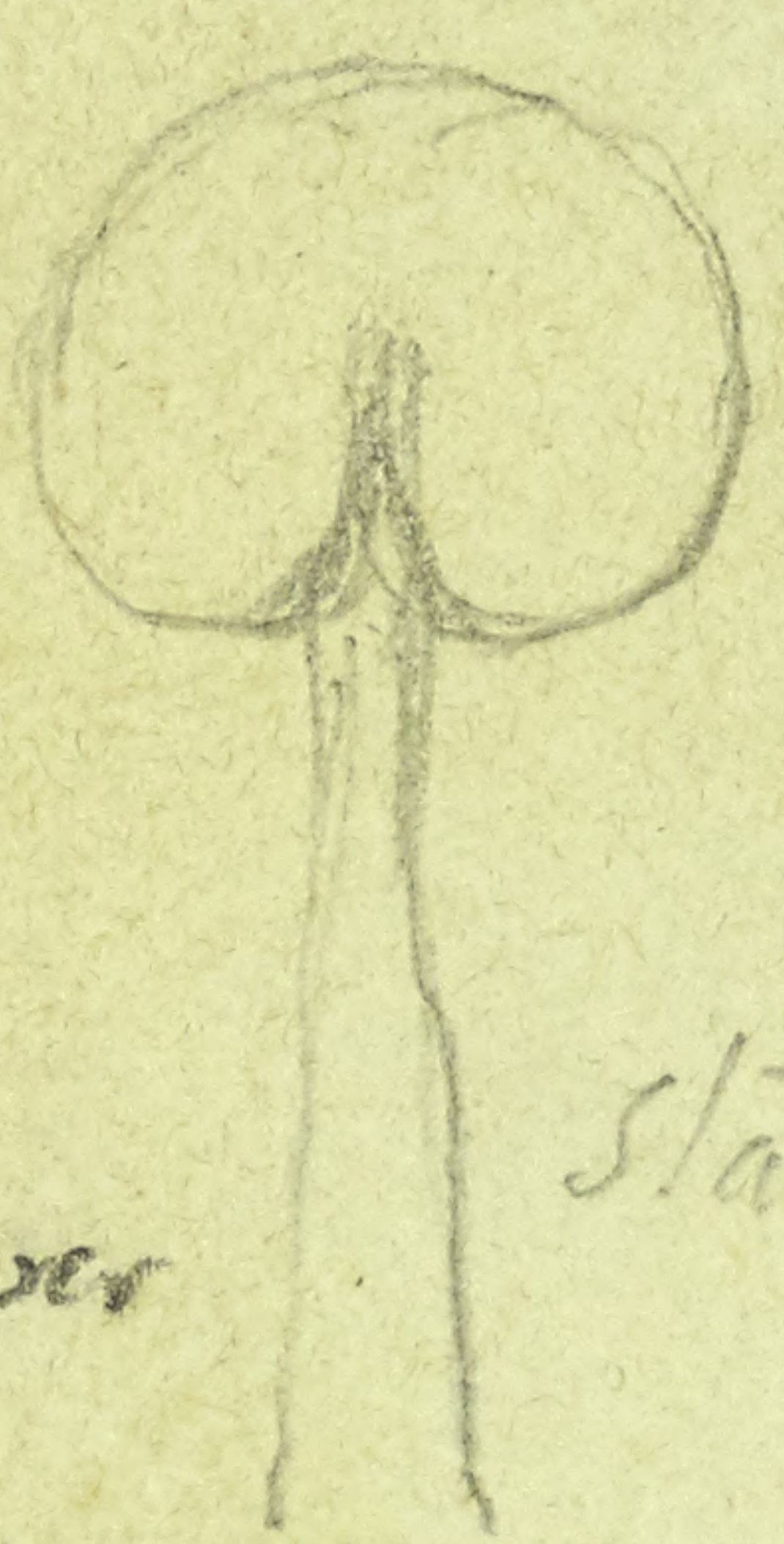




surface x 150



fem flower



stam

x 30

971

ALL
THE NEW REMEDIES
CONSTANTLY ON HAND

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CHEMIST

0 1 2 3 4 5 6 7 8 9 10
cm
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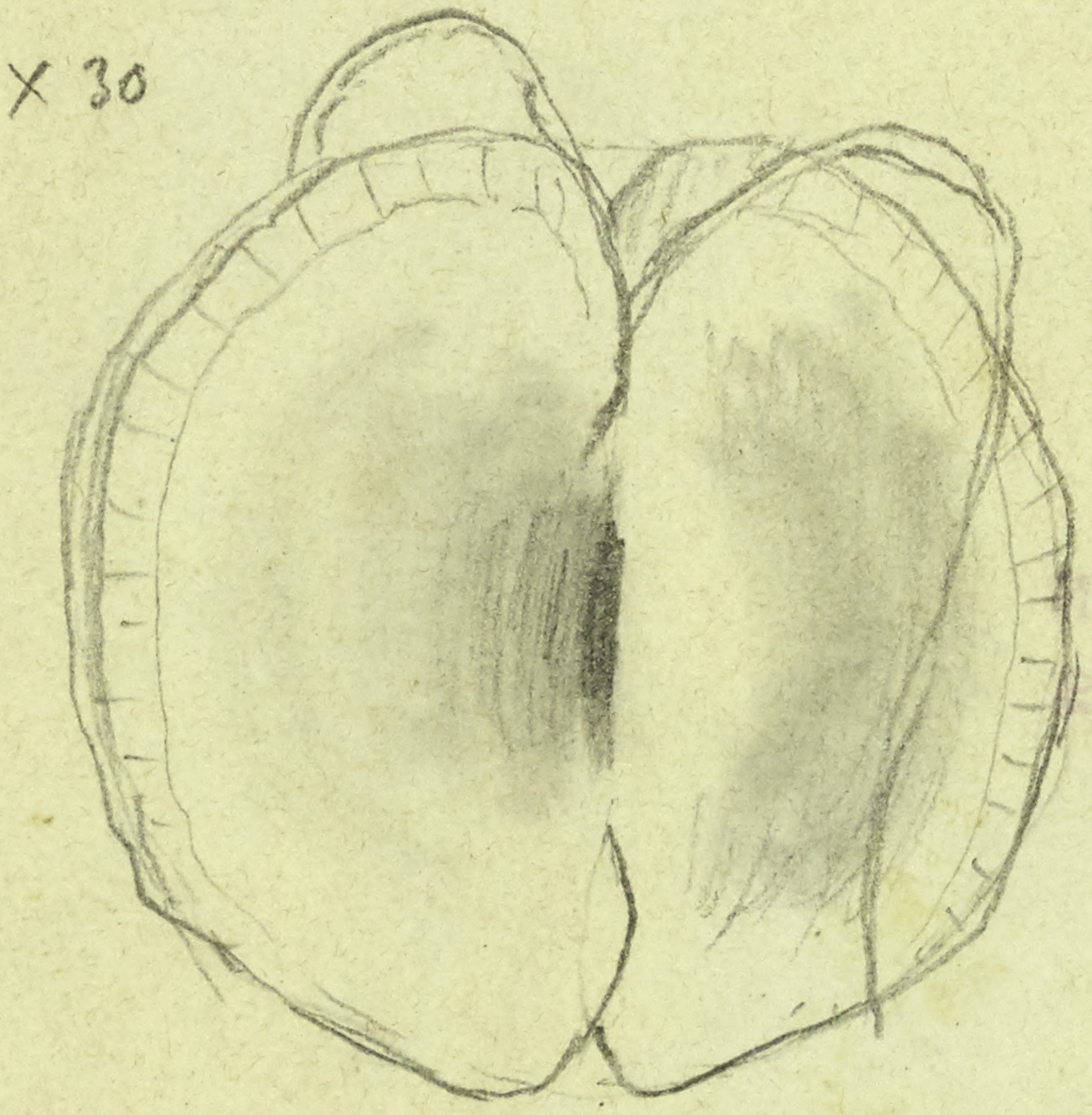
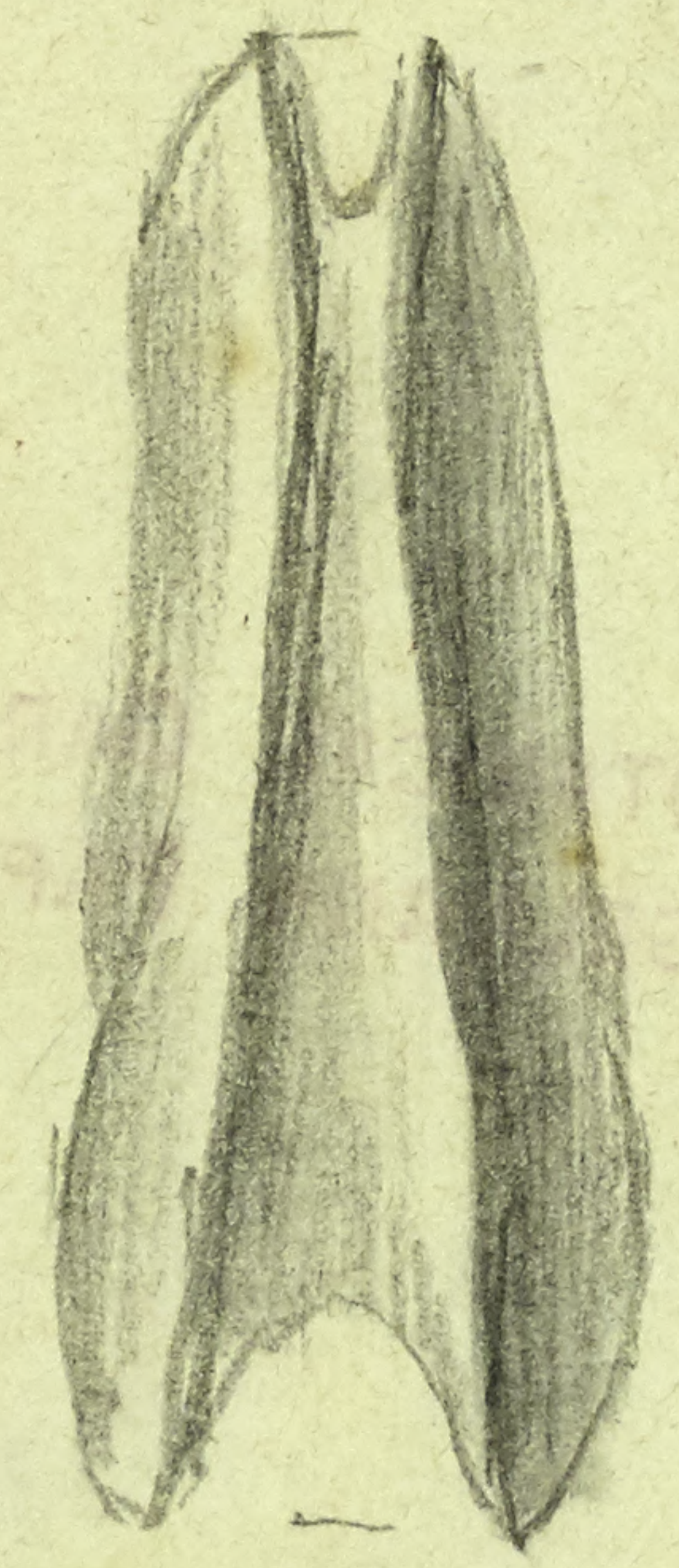
Callitriche

Jan 27 1864

Frankfurt 1825

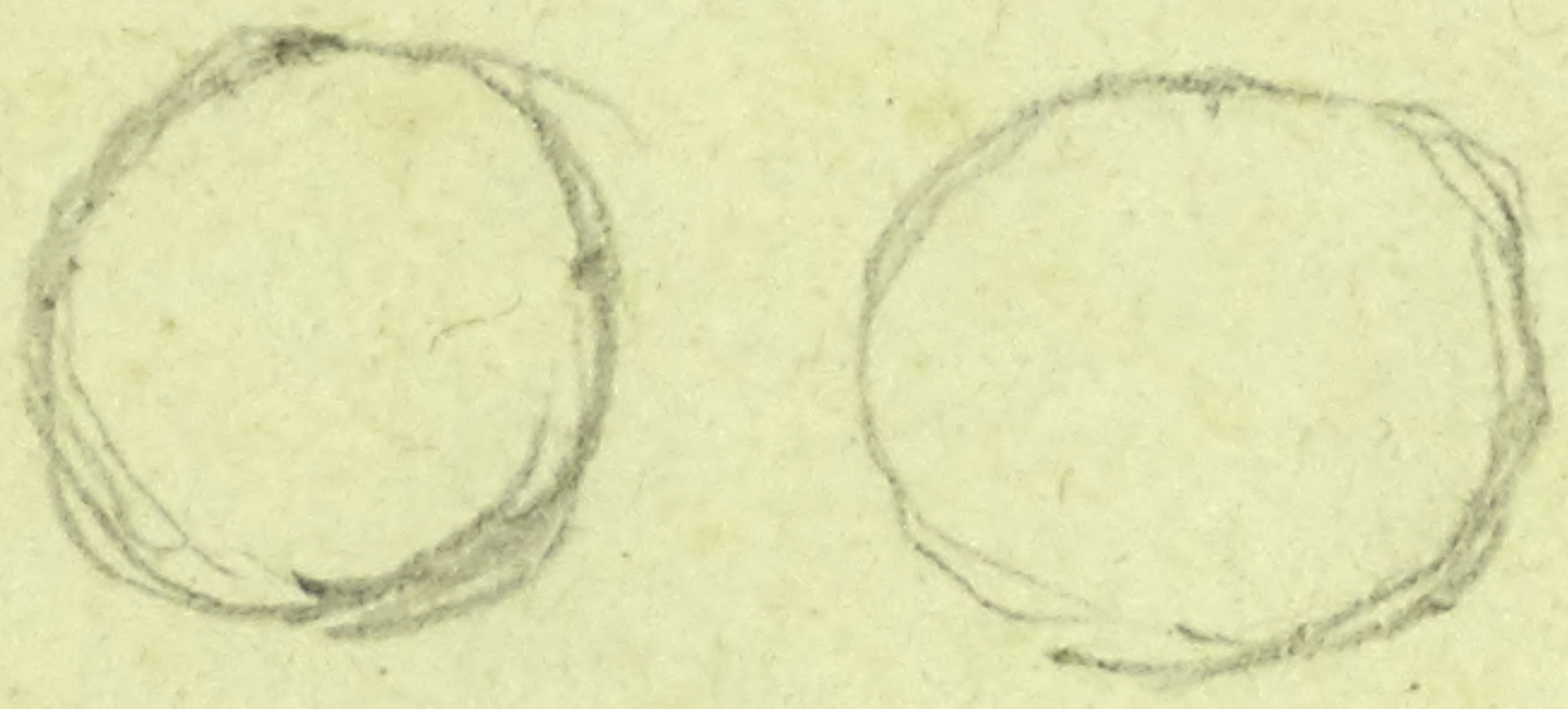
fruit not quite ripe



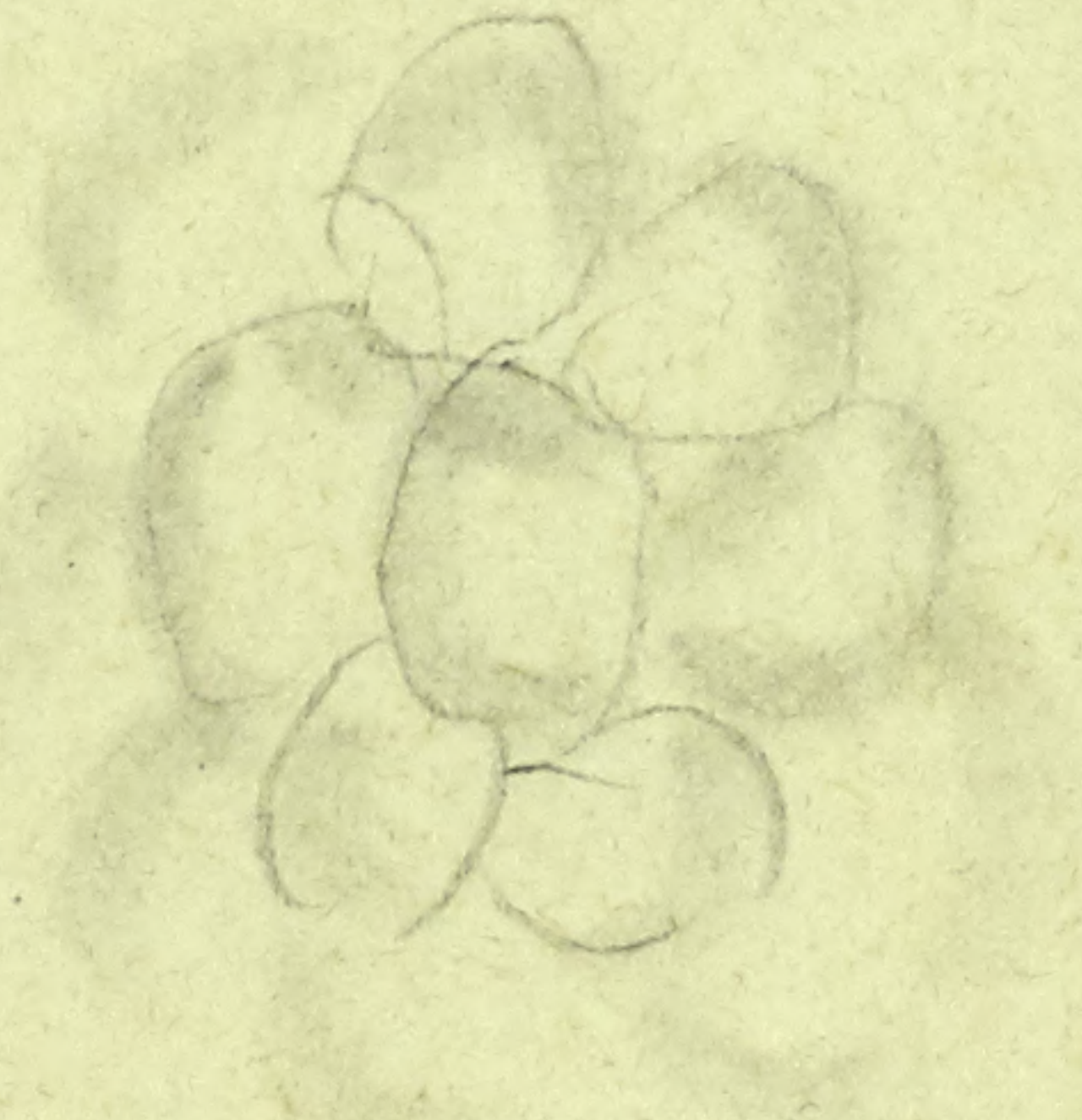


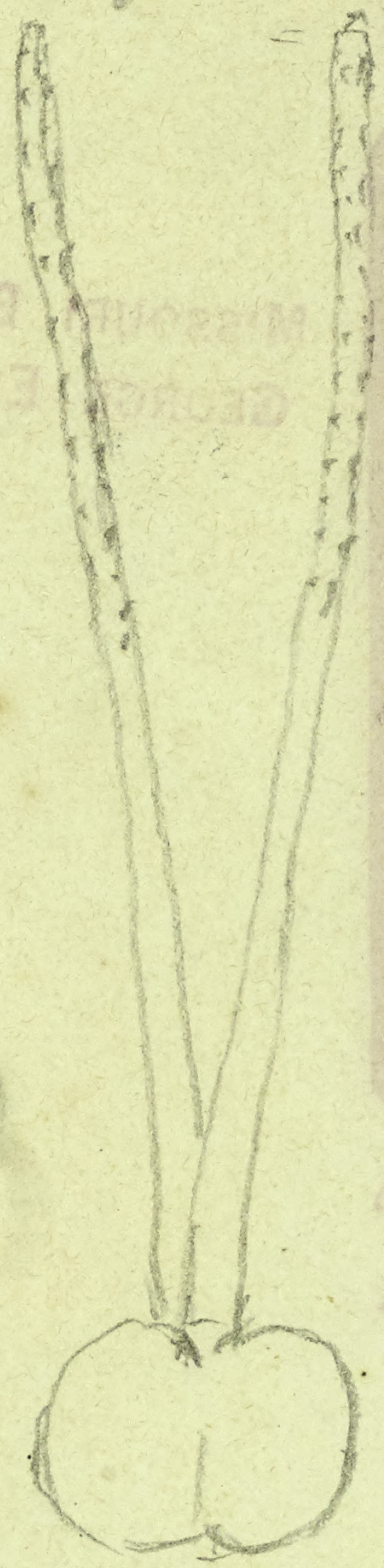
Diameter $\frac{40}{30} = 1,3$ mm

Hegelmaier gives 1.6 – 1.7 mm

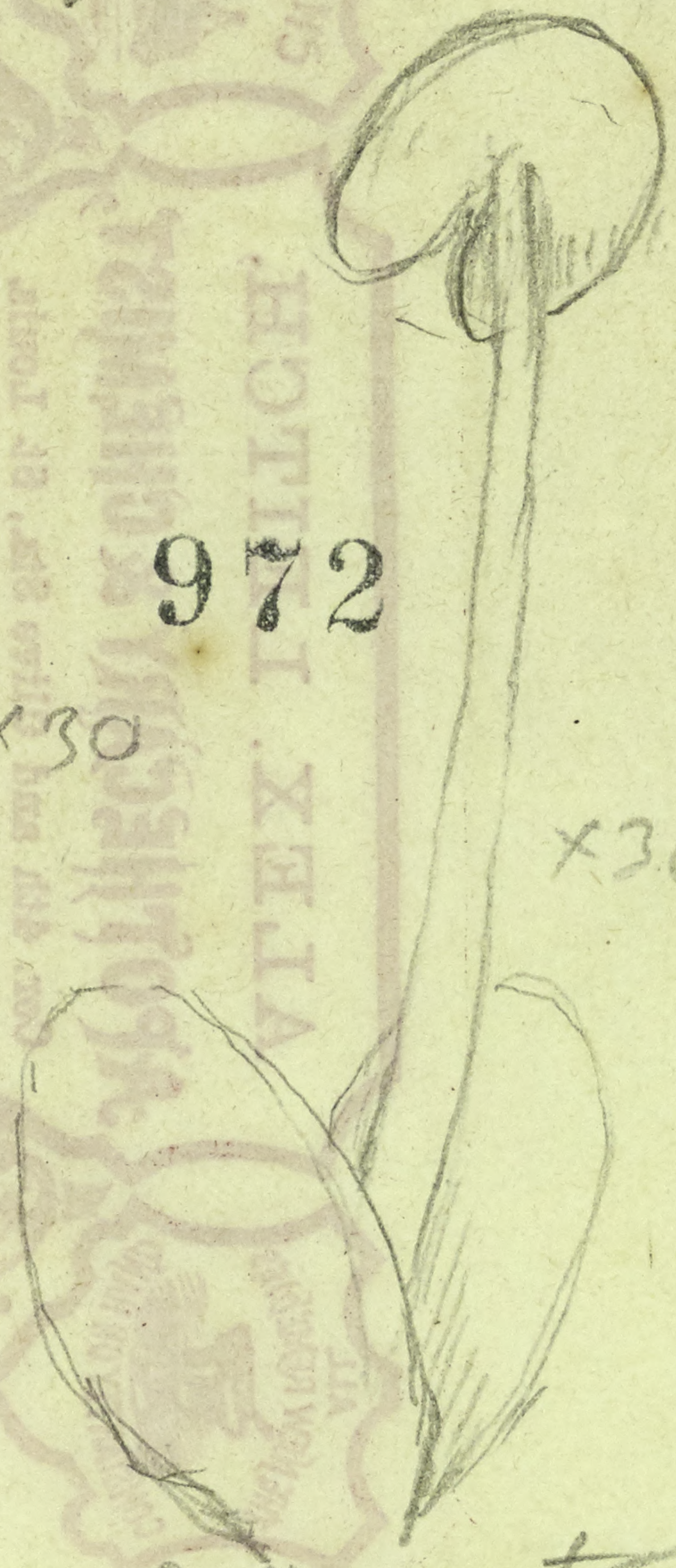

Pollen
x 415

0.025 – 0.030 mm


surface
x 150



fem flower



deflorate stamen

Al. Braun

972

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GARDEN

CHEMIST
ALEX. LEITCH,
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ALL THE NEW REMEDIES CONSTANTLY ON HAND

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Oct 27 1864

Callitriche stagnalis

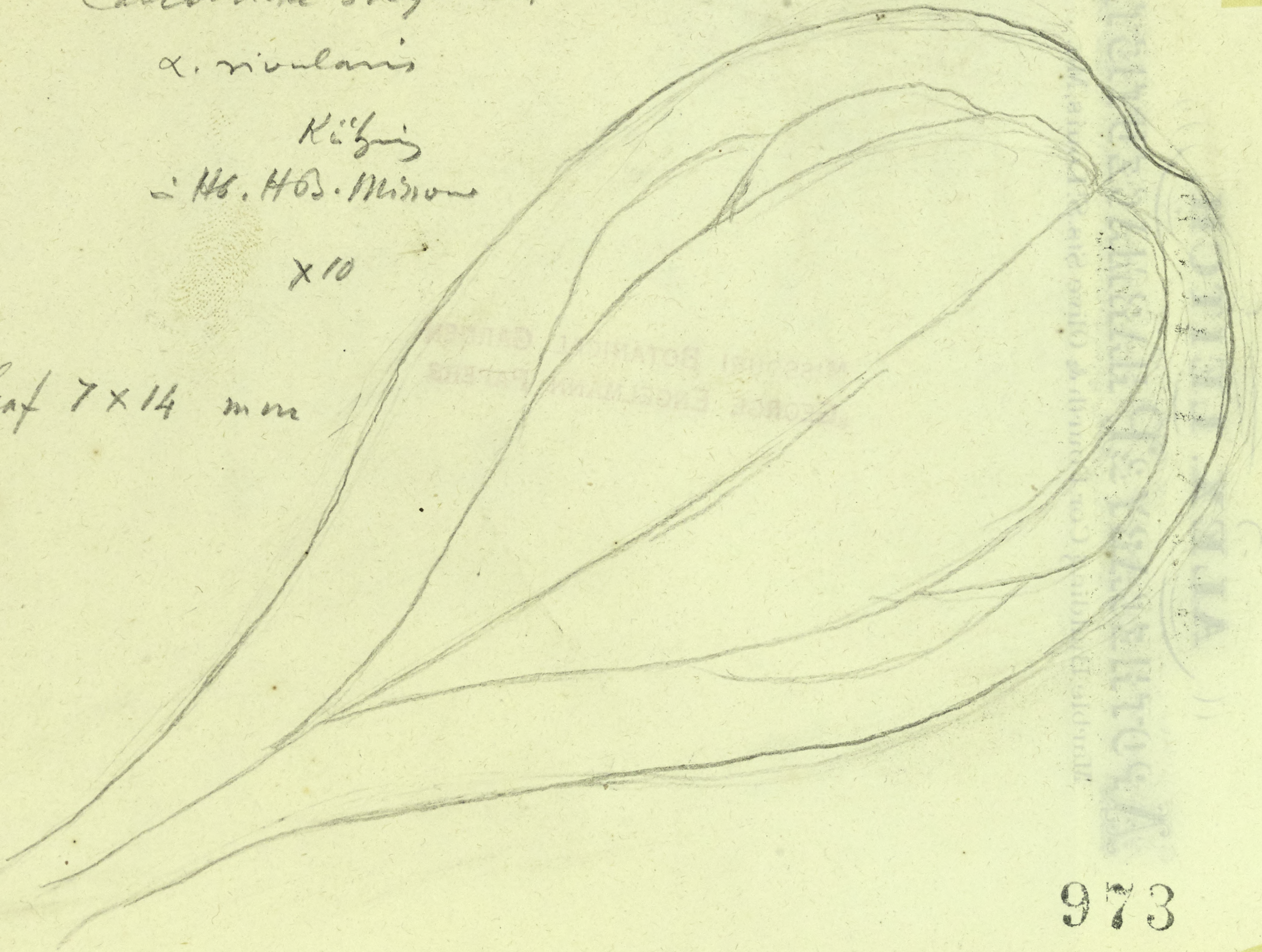
α. rivularis

Kützing

in Hb. HoB. Missouri

x 10

leaf 7 x 14 mm



973

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ALEX. LEITCH,
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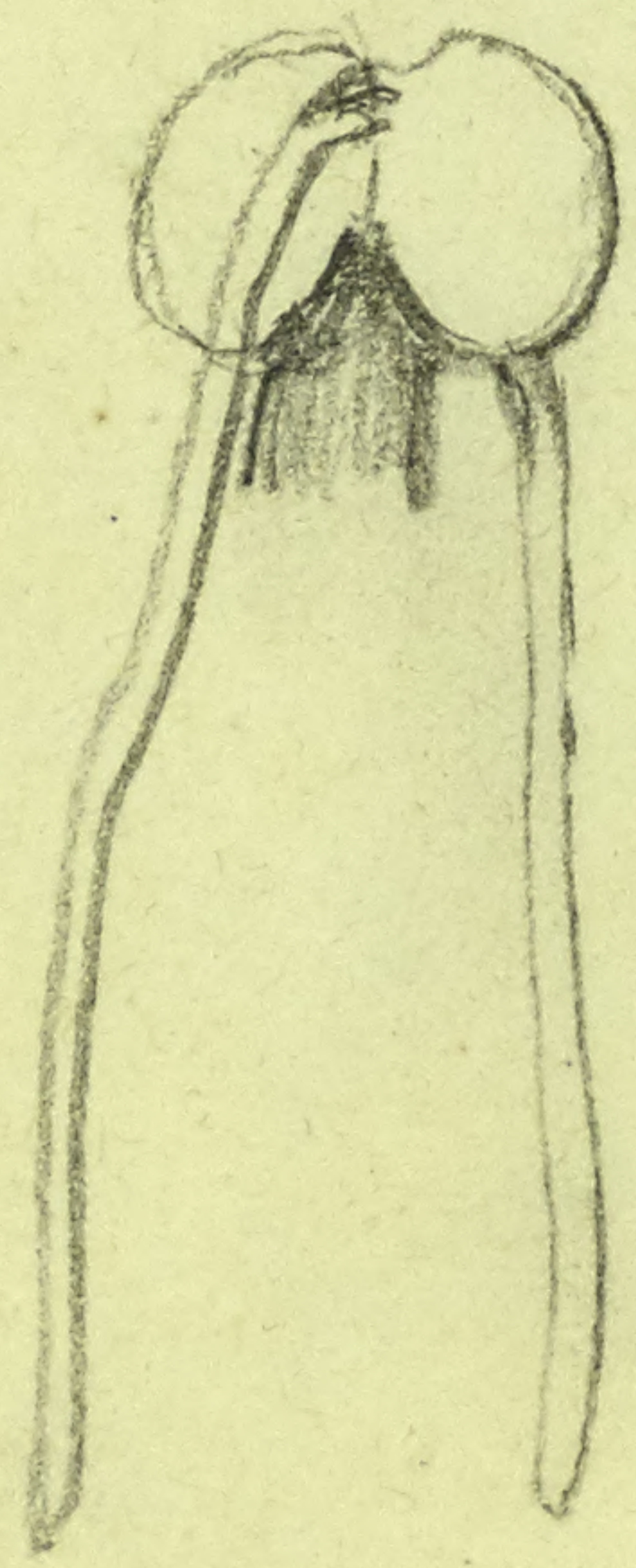
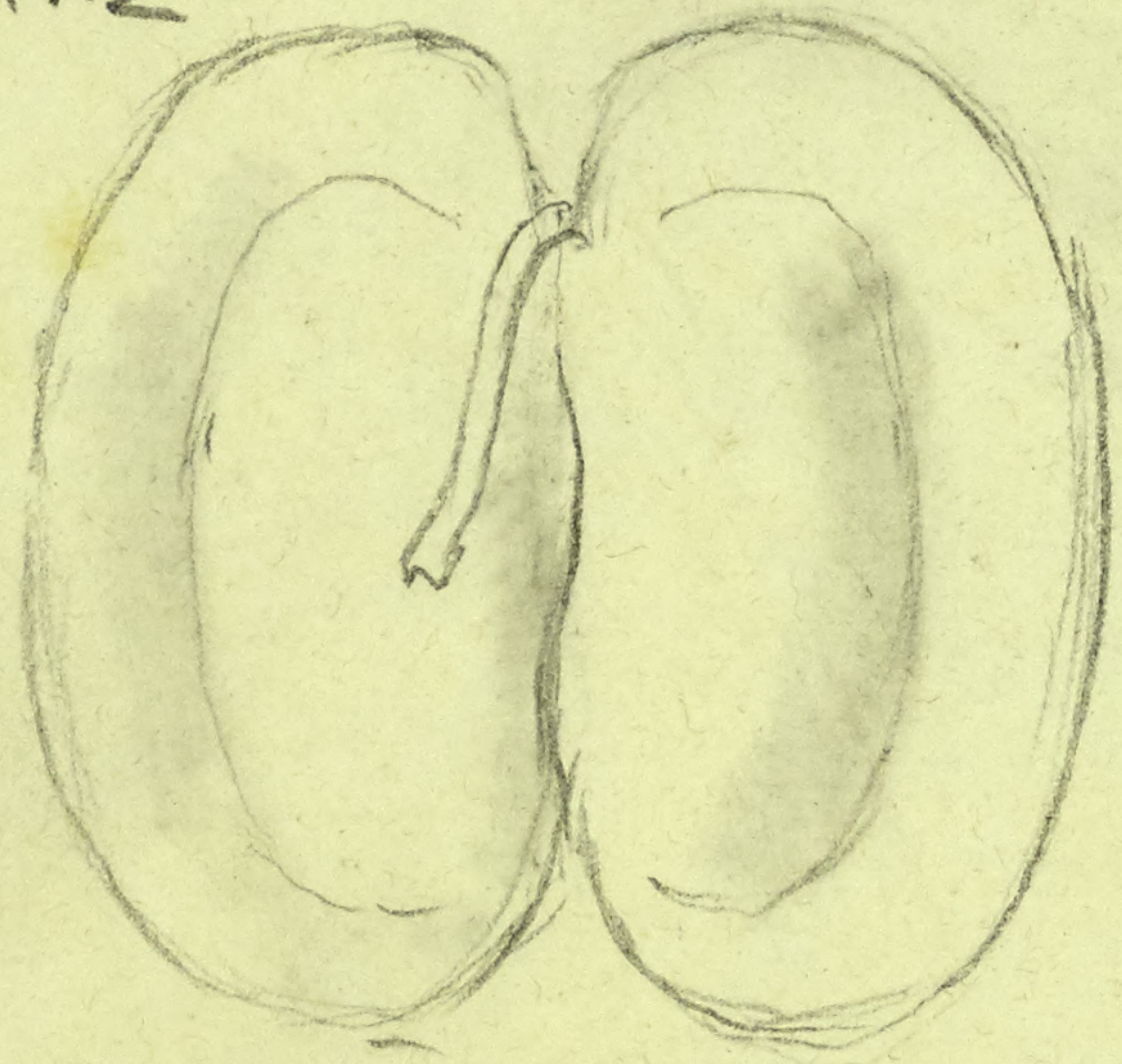
Jan 24 1865

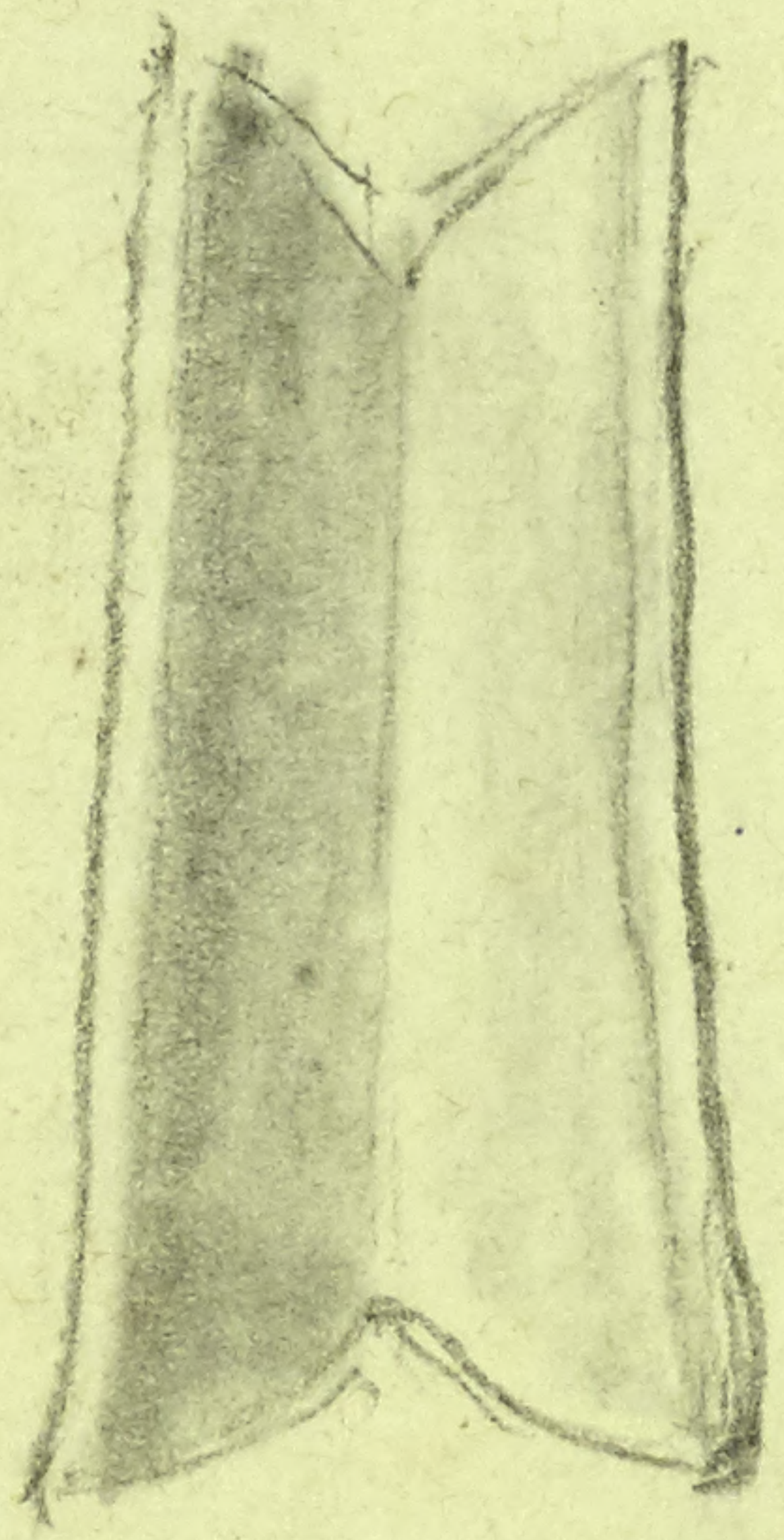
Hannover, Schiele

x 30



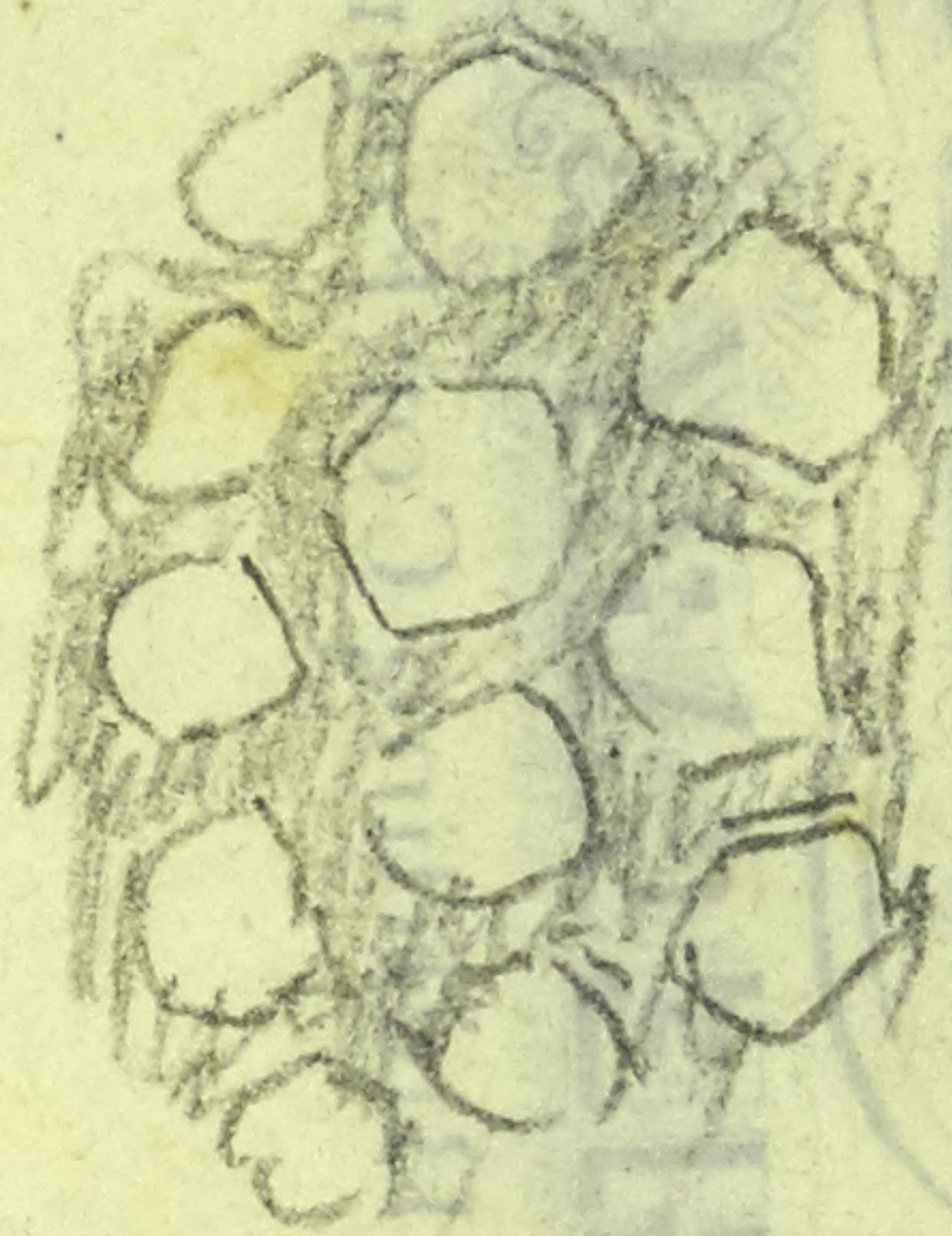
12 x 12



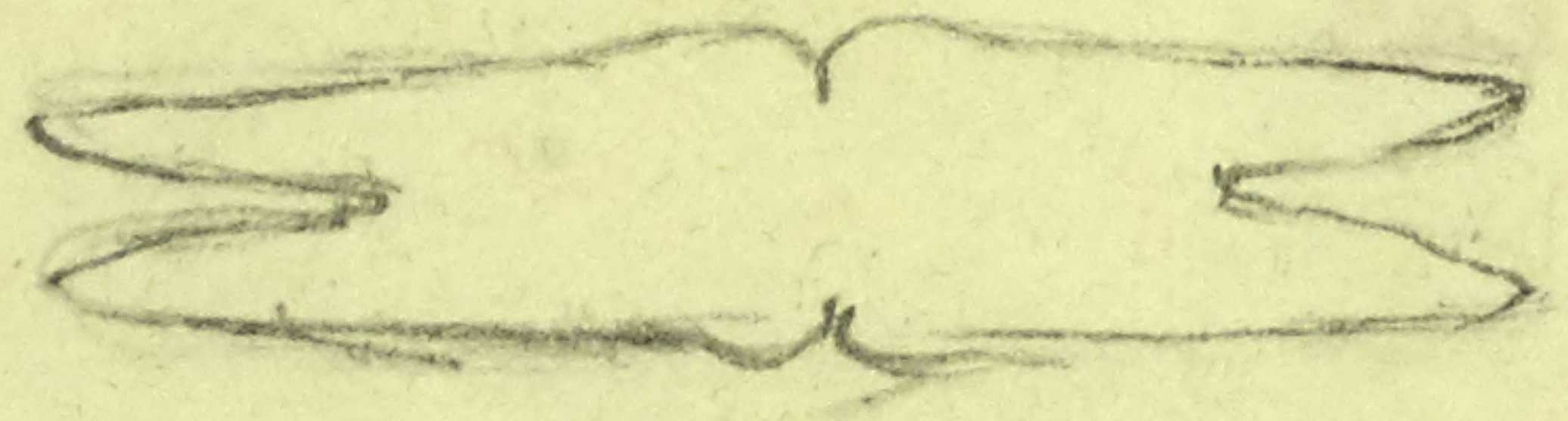


974

ripe fruit

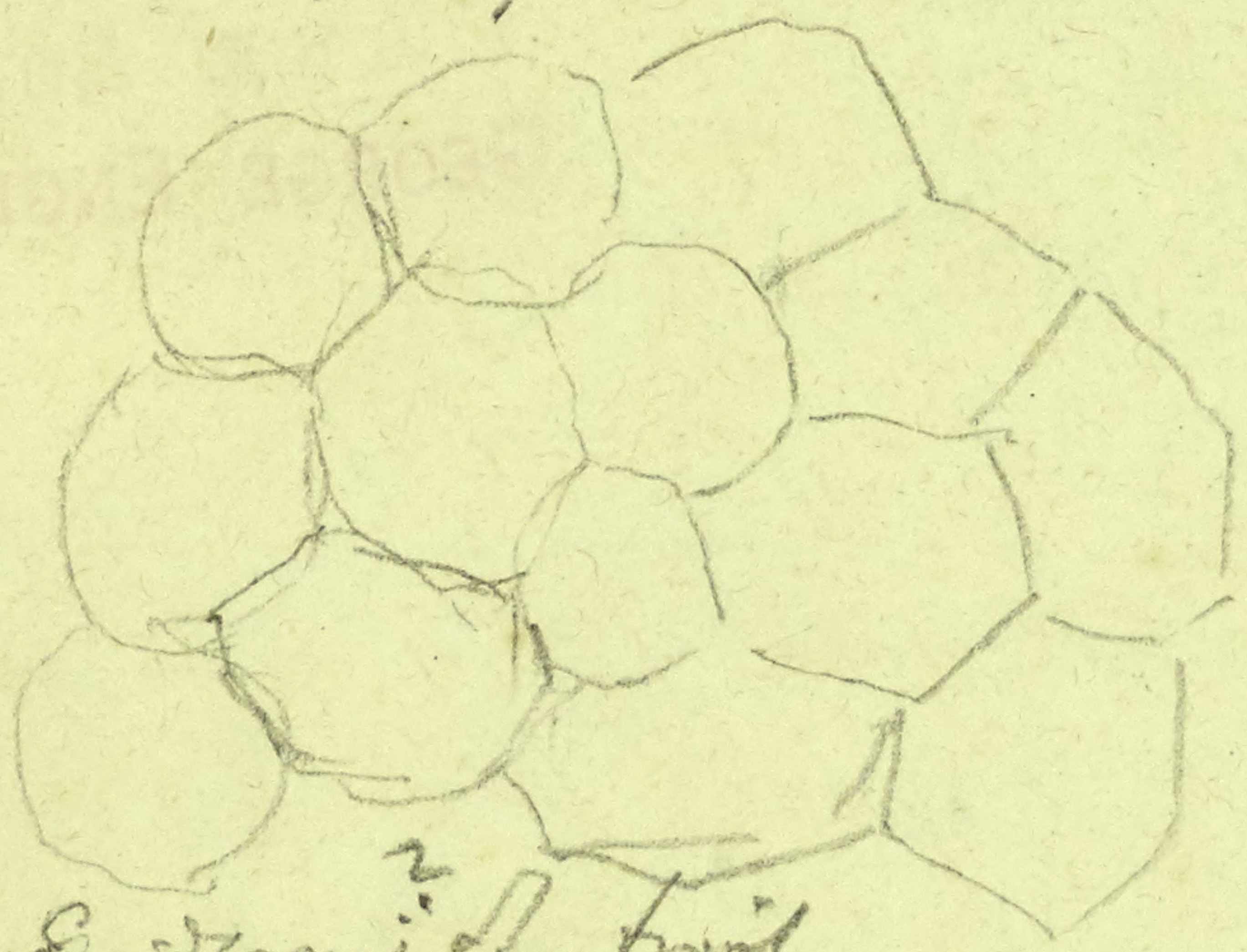


indurated parenchyma cells



x 30

sect. of very young fruit



Epidermis 2 of fruit
x 150

ALEX. LEITCH,
APOTHECARY & PHARMACEUTIST,
Marble Building Cor. Fourth & Olive Sts. St. Louis, Mo.

974A

93-4

No! [illegible]

C. truncata Gussone
R. rarior 4. Fl. Sicil. 9
(ex Hegelm.)
— Hegelm. Monogr. 1868 p. 61

## *Topaz in Utah.* By Henry Engelmann.

During my explorations in Utah as Geologist of the Expedition under Capt. J. H. Simpson, Top. Eng'rs. U. S. A., in 1858 and 1859, I observed some remarkably beautiful crystals of Topaz among some detritus of trachytic porphyry. They were perfectly colorless, transparent, sharply developed, and of great lustre. They were all short columnar. The largest of them measured scarcely one third of an inch in the direction of the basal cleavage, which was highly perfect. I observed ten modifications: all crystals exhibited (according to Prof. Rose's designation)

∞c : b : a , ∞c : b : 2 a , c : ∞b : : ∞a 1 ,
4 c : b : ∞a , 2 c : b : a ;
most of them also 2 c : b : ∞a , c : b : a ;
a few only 2 c : ∞b : a , and 4 (?) c : b : a .

As in none of the crystals were both ends developed, I could not ascertain whether they were hemihedral, as is most common with topaz. The hardness of the mineral is =8. It is infusible before the blowpipe; and when strongly heated is coated with small blisters, but does not show any change of color. It exhibits the reactions of fluorine, alumina, and silex. No tests were made for other elements, nor were the crystals examined in regard to pyro-electricity and polarization of light. They exhibit double refraction quite plainly.

The locality of the mineral is near lat. 39° 40′, long. 113° 30′ west of Greenwich, west of south of Salt Lake, in Thomas' range of mountains, on Capt. Simpson's return trail. Circumstances prevented me from obtaining more than a few crystals, which are now deposited in the collection of the Smithsonian Institute; a few others are also in the hands of members of the party. We were travelling at the time by forced night marches with nearly worn out animals, seeking to gain a spring of water in a distant range of mountains. This desert was then entirely unexplored. I have but little doubt that more interesting materials are to be found at the same point.

The mountains of the former Territory of Utah promise a rich yield to the mineralogist. We know already of gold and silver ores in the east, west and south part of that district; of copper and lead ores in the south, and I have discovered the latter also in the centre of it; of specular iron ores and native sulphur in the Rocky Mountains and near Little Salt Lake; of rock salt in the mountains south-east of Utah Lake; of native alum near Salt Lake; of various other salts in the deserts; and of silicates, composing the granites, porphyries, diorites, trachytes, and lavas, nearly over the whole area.

### Elæacrinus Kirkwoodensis, n. sp.

Body very small, subglobose, a little longer than wide, flattened above and below. Basal pieces very gently concave, with their edges on a level with the plane of the under side. Radial pieces (fork pieces) reaching to the base and occupying more than four fifths the entire length of the body, narrow below and widest in the middle, sides gently arched. Interradial pieces subdeltoid, very prominent towards the apex, much longer than wide, obtusely angulated below, acutely angulated above, and notched on either side a short distance below the summit. Pseudo-ambulacral areas extending from base to summit, narrow, deeply impressed; sides nearly parallel; pore pieces amounting to about fifty in each field. A longitudinal fissure or slit extends from the central summit opening downwards, separating the pore pieces of one side from their fellows of the opposite for the distance of about one fifth the length of the field, thence their inner edges are united in the median line to the base. Pseudo-ambulacral spaces lanceolate, sloping gently from their edges to the sutures. Ovarial apertures eight, very minute, situated at the notches of the interradial plates. Anal opening large, circular or very slightly elliptical. The surface markings are not plainly exhibited in any of the specimens I have collected of this species. On several of them I observe, more or less distinctly, irregular coarse rugæ or pittings, which, however, may be due to weathering.

*Dimensions.*—Length, 0.20 of an inch; width, 0.18.

The *Elæacrinus Kirkwoodensis* is nearly allied to *E.* (*Pentremites*) *melo*, from which it is distinguished by its much smaller size and less deeply excavated base. It also occupies a higher geological position.

Occurs in the St. Louis Limestone (Carboniferous) on the Pacific railroad near Kirkwood, St. Louis county, Missouri.

0 1 2 3 4 5 6 7 8 9 10
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MISSOURI BOTANICAL GARDEN

9741B

## IV. *Direction of Winds and number of Thunderstorms in '61 & '62.*

| 1861. | E. | N. | N.E. | S.W. | N.W. | S. | W. | S.E. | Prevailing Winds. | Thunderstorms. |
|---|---|---|---|---|---|---|---|---|---|---|
| January...... | 11 | 3 | 12 | 22 | 38 | 18 | 28 | 61 | S.E. .......... | ...... 0 |
| February .... | 4 | 2 | 2 | 35 | 24 | 19 | 41 | 60 | S.E. .......... | ...... 2 |
| March......... | 12 | 11 | 10 | 23 | 30 | 19 | 42 | 40 | W. & S.E.... | ...... 3 |
| April ......... | 16 | 10 | 9 | 26 | 21 | 35 | 34 | 26 | S. & W....... | ...... 2 |
| May .......... | 26 | 10 | 23 | 21 | 8 | 13 | 49 | 35 | W. & S.E.... | ...... 5 |
| June .......... | 12 | 21 | 22 | 20 | 25 | 26 | 8 | 41 | S.E. .......... | ...... 7 |
| July .......... | 3 | 31 | 14 | 21 | 26 | 46 | 15 | 29 | S. .............. | ...... 3 |
| August ....... | 18 | 24 | 58 | 17 | 11 | 18 | 3 | 37 | N.E. .......... | ...... 5 |
| September... | 6 | 14 | 18 | 26 | 30 | 13 | 21 | 52 | S.E. & N.W. | ...... 3 |
| October ...... | 12 | 9 | 5 | 21 | 30 | 33 | 30 | 46 | S.E. & S..... | ...... 1 |
| November.... | 7 | 15 | 8 | 22 | 27 | 20 | 36 | 44 | S.E. & W.... | ...... 1 |
| December ... | 9 | 19 | 9 | 25 | 23 | 33 | 17 | 51 | S.E. & S..... | ...... 0 |
|  | 136 | 169 | 190 | 279 | 293 | 293 | 324 | 522 | S.E. .......... | ...... 32 |

| 1862. | E | S.W. | N. | N.E. | W. | S. | N.W. | S.E. | Prevailing Winds. | Th. st's. |
|---|---|---|---|---|---|---|---|---|---|---|
| Jan....... | 19 | 6 | 19 | 23 | 29 | 3 | 38 | 51 | S.E. ..................... | 1 |
| Feb....... | 14 | 9 | 18 | 16 | 22 | 7 | 39 | 43 | S.E. & N.W. ......... | 0 |
| March ... | 9 | 14 | 3 | 15 | 59 | 10 | 34 | 43 | W., S.E. & N.W.... | 4 |
| April .... | 12 | 13 | 18 | 31 | 18 | 11 | 34 | 47 | S.E., N.W. & N.E.. | 6 |
| May...... | 12 | 18 | 14 | 38 | 18 | 30 | 14 | 44 | S.E. & N.E.......... | 5 |
| June .... | 3 | 29 | 24 | 16 | 8 | 36 | 26 | 23 | S., S.W., N.W., N. & S.E............... | 6 |
| July...... | 5 | 25 | 17 | 7 | 2 | 24 | 31 | 77 | S.E. ..................... | 10 |
| August.. | 6 | 16 | 16 | 45 | 5 | 22 | 28 | 48 | S.E. & N.E.......... | 7 |
| Sept. .... | 16 | 10 | 21 | 18 | 11 | 18 | 13 | 72 | S.E. ..................... | 6 |
| Oct....... | 1 | 15 | 19 | 4 | 10 | 40 | 47 | 46 | N.W. & S.E. ......... | 1 |
| Nov....... | 14 | 19 | 21 | 12 | 43 | 19 | 34 | 18 | W. & N.W. .......... | 0 |
| Dec....... | 11 | 17 | 21 | 5 | 34 | 45 | 13 | 38 | S., S.E. & W. ....... | 4 |
|  | 112 | 191 | 211 | 230 | 259 | 265 | 351 | 550 | S.E. ..................... | 50 |

## V. *Positive or Negative Electricity in the Observations of* '61 & '62.

|  | Positive Electricity. |  | Negative Electricity. |  | No Electricity, or 0. |  | Highest Positive Electricity. |  |
|---|---|---|---|---|---|---|---|---|
|  | 1861. | 1862. | 1861. | 1862. | 1861. | 1862. | 1861. | 1862. |
| Jan....... | 179 | 179 | 3 | 5 |  | 2 | 40° | 40° |
| Feb....... | 162 | 166 | 6 | 2 |  |  | 34 | 33 |
| March ... | 168 | 179 | 15 | 8 |  |  | 30 | 48 |
| April .... | 157 | 157 | 12 | 22 | 1 | 1 | 33 | 52 |
| May...... | 171 | 180 | 17 | 5 | 1 | 3 | 25 | 32 |
| June .... | 162 | 143 | 5 | 2 | 8 | 20 | 16 | 21 |
| July...... | 183 | 153 | 3 | 8 | 1 | 24 | 14 | 11 |
| August.. | 176 | 143 | 5 | 4 | 6 | 40 | 15 | 19 |
| Sept...... | 169 | 117 | 1 | 1 | 10 | 61 | 18 | 23 |
| Oct....... | 162 | 143 | 4 | 3 | 20 | 41 | 33 | 35 |
| Nov... ... | 172 | 157 | 2 | 7 | 6 | 16 | 42 | 42 |
| Dec... ... | 175 | 166 | 5 | 0 | 6 | 17 | 37 | 35 |
|  | 2046 | 1883 | 78 | 67 | 59 | 225 | 42° | 52° |

Call. hamulata
Kützing in Koch Synops
Flor. Germ.
1837
pg. 246

93-7

## *Additional Remarks on* ATMOSPHERIC ELECTRICITY.

### By A. WISLIZENUS, M.D.

The delay in the publication of this volume enables me to add to my observations of atmospheric electricity in 1861, the result of my observations in 1862. The latter observations have been made in the same manner and by means of the same fine glass thread, which, after many thousand torsions, proves as good as ever. I present herewith in tabular form the general result of my observations in 1861 and 1862.

---

I. *Monthly mean of Positive Atmospheric Electricity in* 1861 *and* 1862, *at St. Louis, Mo., based upon daily observations at* 6, 9, 12, 3, 6 *and* 9 *o'clock, from morning till night.*

| | Jan. | Feb. | Mar. | Ap'l. | May. | Jun. | Jul. | Aug. | Sept. | Oct. | Nov. | Dec. | Mean of Year. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1861* | 16.5 | 12.1 | 9.8 | 8.8 | 7.8 | 4.0 | 3.7 | 3.4 | 3.0 | 7.1 | 10.0 | 14.3 | 8.4 |
| 1862 | 12.1 | 16.0 | 9.4 | 10.6 | 7.5 | 3.0 | 2.2 | 2.3 | 3.0 | 7.7 | 12.6 | 13.9 | 8.4 |

* This table of 1861 differs in some decimals from that published on page 66 and in Diagram No. 1. Having discovered some errors, I calculated all my observations once more, and give now the present as the corrected table.

---

II. *Monthly mean of Temperature and of Relative Humidity in* 1861 *and* 1862, *at St. Louis, Mo., based upon daily observations, cotemporaneous with those of Atmospheric Electricity.*

TEMPERATURE.

| | Jan. | Feb. | Mar. | Ap'l. | May. | Jun. | Jul. | Aug. | Sept. | Oct. | Nov. | Dec. | Mean of Year. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1861 | 32.2 | 40.4 | 44.8 | 58.1 | 64.1 | 76.9 | 77.5 | 78.6 | 69.1 | 57.9 | 46.0 | 39.7 | 57.1°F. |
| 1862 | 28.9 | 30.2 | 43.2 | 55.0 | 69.7 | 75.1 | 81.2 | 80.7 | 72.1 | 57.3 | 42.6 | 41.3 | 56.4°F. |

RELATIVE HUMIDITY.

| | Jan. | Feb. | Mar. | Ap'l. | May. | Jun. | Jul. | Aug. | Sept. | Oct. | Nov. | Dec. | Mean of Year. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1861 | 72.2 | 63.3 | 64.5 | 61.5 | 66.3 | 70.8 | 66.3 | 69.6 | 77.3 | 76.6 | 69.0 | 74.3 | 69.5 |
| 1862 | 85.3 | 73.9 | 70.8 | 67.0 | 57.3 | 67.0 | 66.8 | 64.3 | 74.2 | 67.2 | 69.5 | 74.6 | 69.8 |

---

III. *Yearly mean of Positive Electricity of Temperature, and of Relative Humidity of the Atmosphere, at the hours of* 6, 9, 12, 3, 6 *and* 9, *from morning till night, based upon daily observations at these hours through the years* 1861 *and* 1862, *at St. Louis, Mo.*

ELECTRICITY.

| | At 6 A.M. | At 9 A.M. | At 12 M. | At 3 P.M. | At 6 P.M. | At 9 P.M. |
|---|---|---|---|---|---|---|
| 1861 | 8.6 | 10.0 | 9.2 | 7.9 | 8.7 | 6.9 |
| 1862 | 8.9 | 10.0 | 9.1 | 7.3 | 8.1 | 6.8 |

TEMPERATURE.

| | At 6 A.M. | At 9 A.M. | At 12 M. | At 3 P.M. | At 6 P.M. | At 9 P.M. |
|---|---|---|---|---|---|---|
| 1861 | 48.9° F. | 54.9 | 61.6 | 63.6 | 59.3 | 54.3 |
| 1862 | 48.9 | 55.0 | 60.9 | 62.3 | 58.0 | 53.6 |

RELATIVE HUMIDITY.

| | At 6 A.M. | At 9 A.M. | At 12 M. | At 3 P.M. | At 6 P.M. | At 9 P.M. |
|---|---|---|---|---|---|---|
| 1861 | 86.4 | 71.3 | 60.3 | 57.2 | 65.1 | 77.3 |
| 1862 | 85.3 | 70.6 | 60.0 | 57.5 | 67.6 | 78.0 |

0 1 2 3 4 5 6 7 8 9 10
cm
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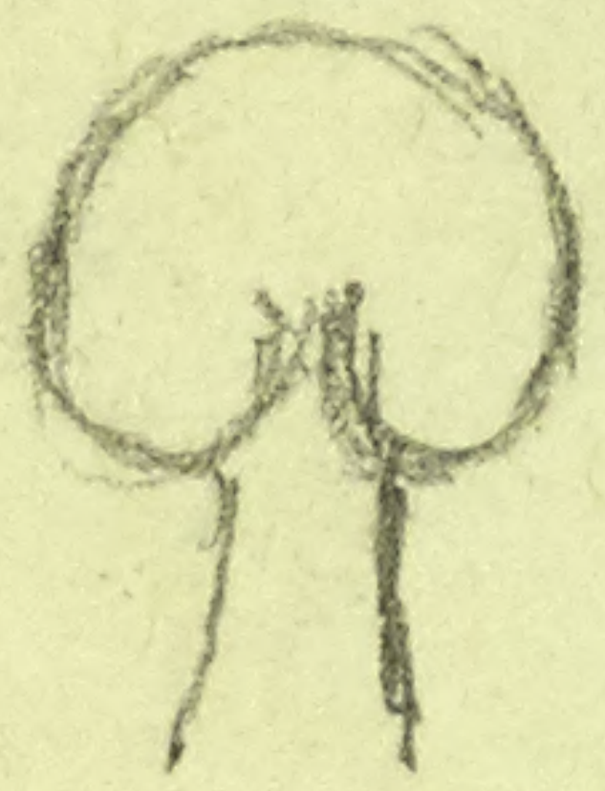
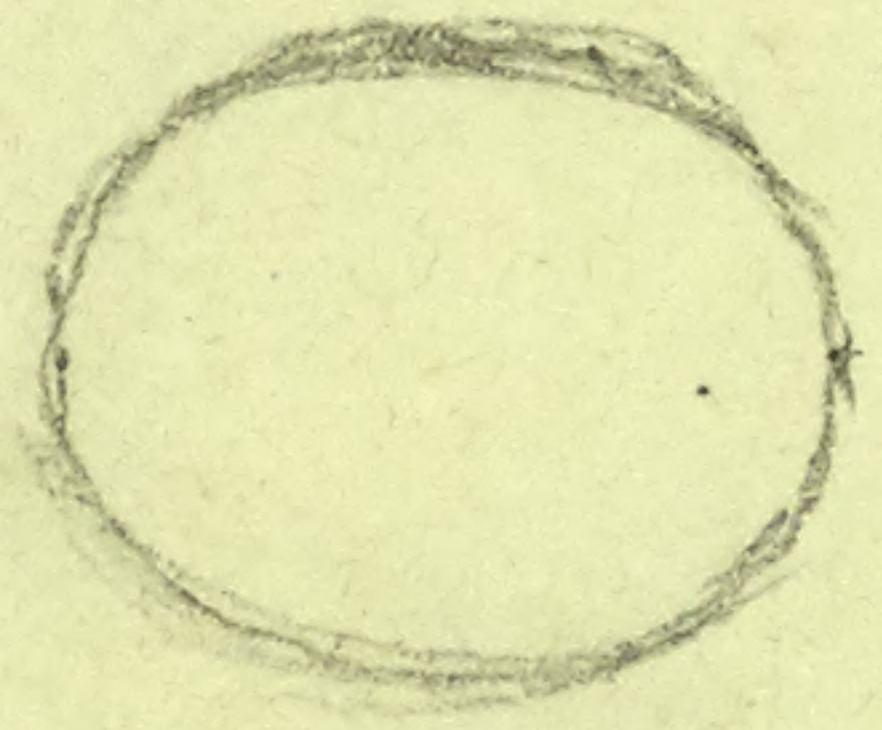
MISSOURI
BOTANICAL
GARDEN

Jan 24 1865

Sardinia, Muller
Hb HBd Miss

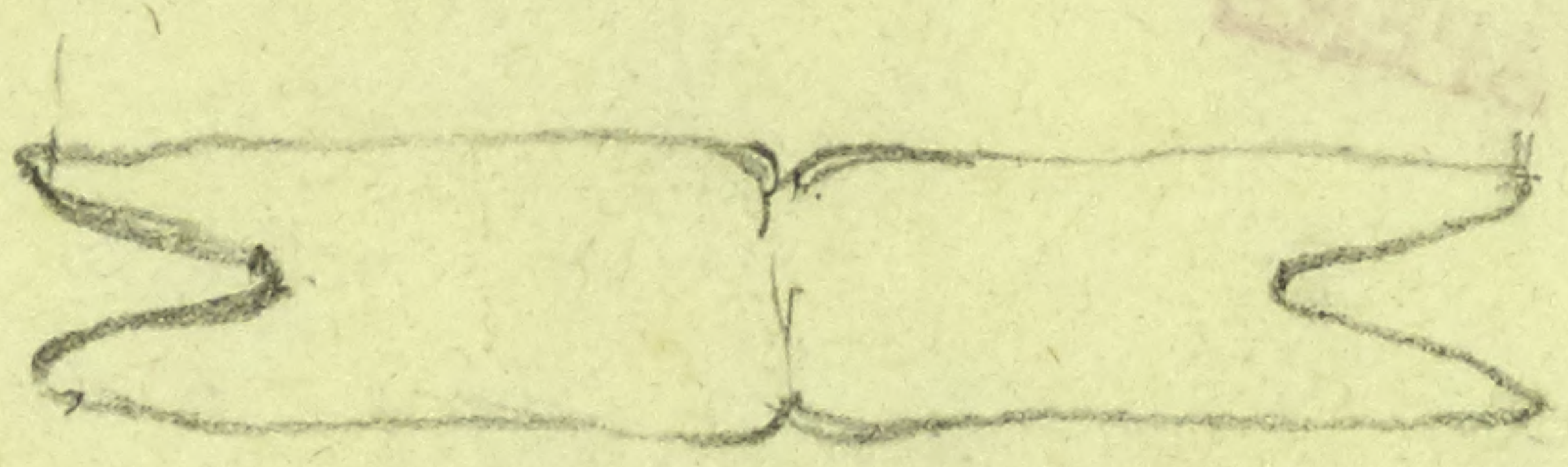
975





Pollengrain $\frac{13\times10}{415} = 0.031 \times 0.024$ mm

doubtful, only one grain seen
which may belong to hamulata calophylla (exam'd on same slide
and the submersed anther may have been sterile



sect of very young fruit

0 1 2 3 4 5 6 7 8 9 10
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MISSOURI BOTANICAL GARDEN

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APOTHECARY & PHARMACEUTIST,
Marble Building Cor. Fourth & Olive Sts. St. Louis, Mo.

0 1 2 3 4 5 6 7 8 9 10
cm
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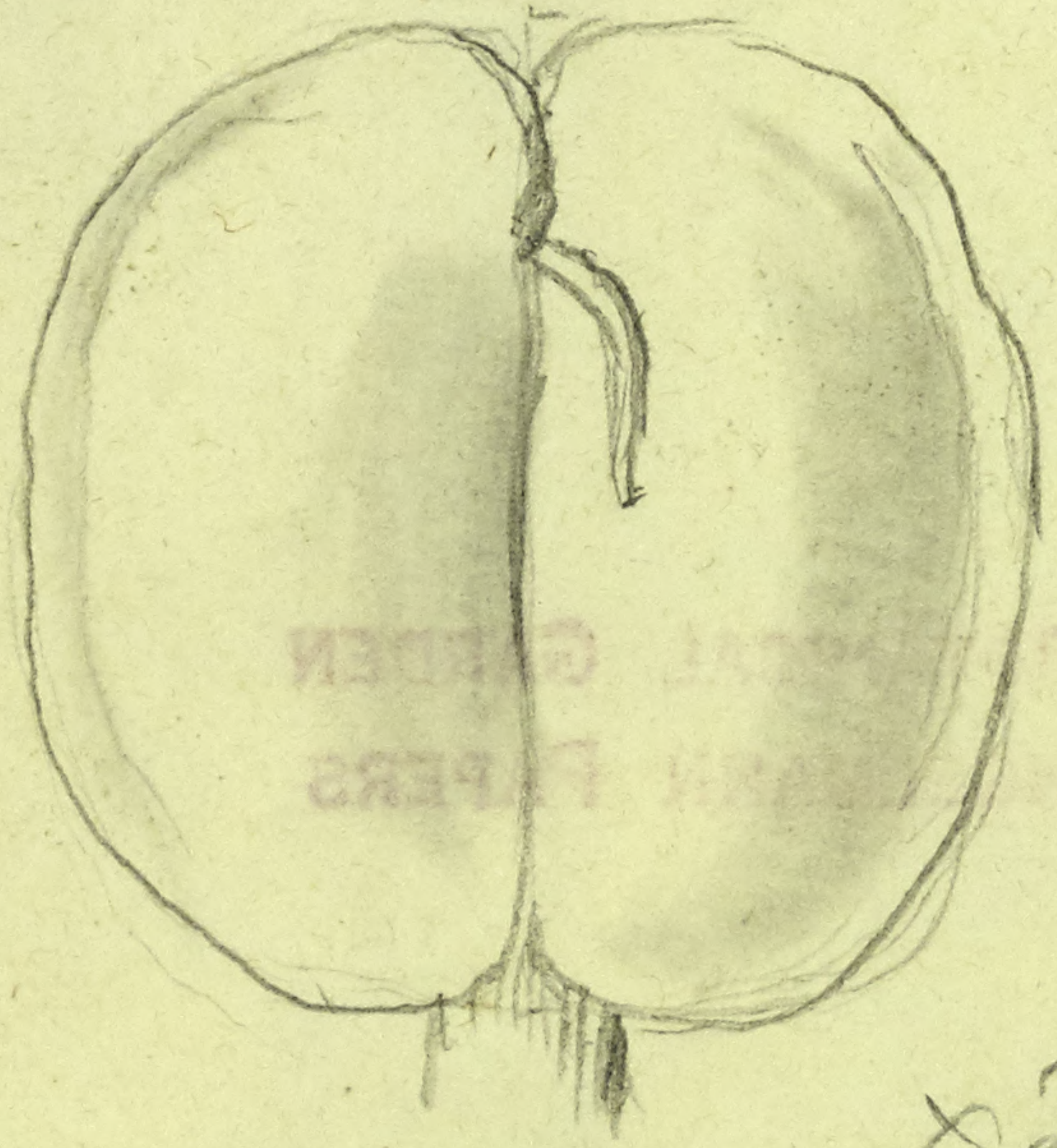
976

Callitriche truncata

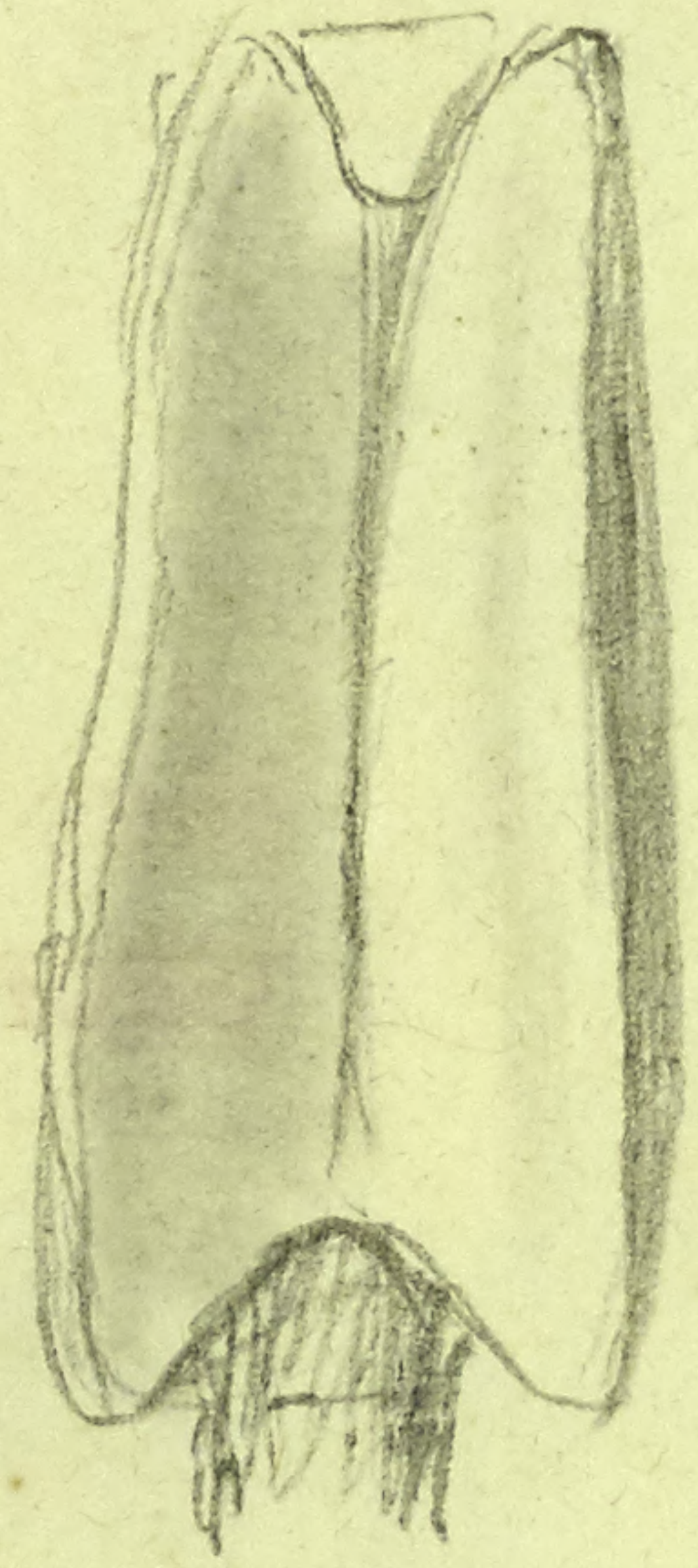
Aug 26 1864

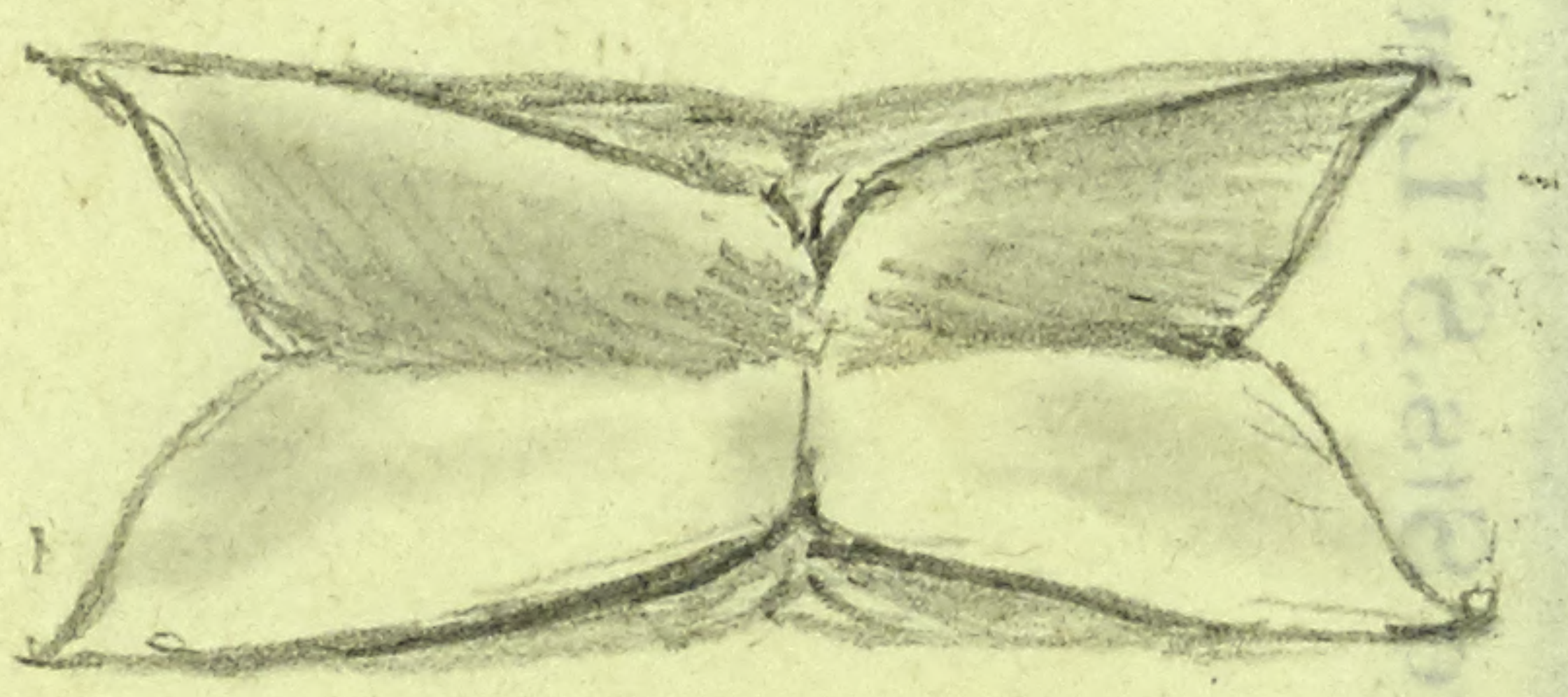
Pula, Sardinia, Müller, Herb Bernhardi



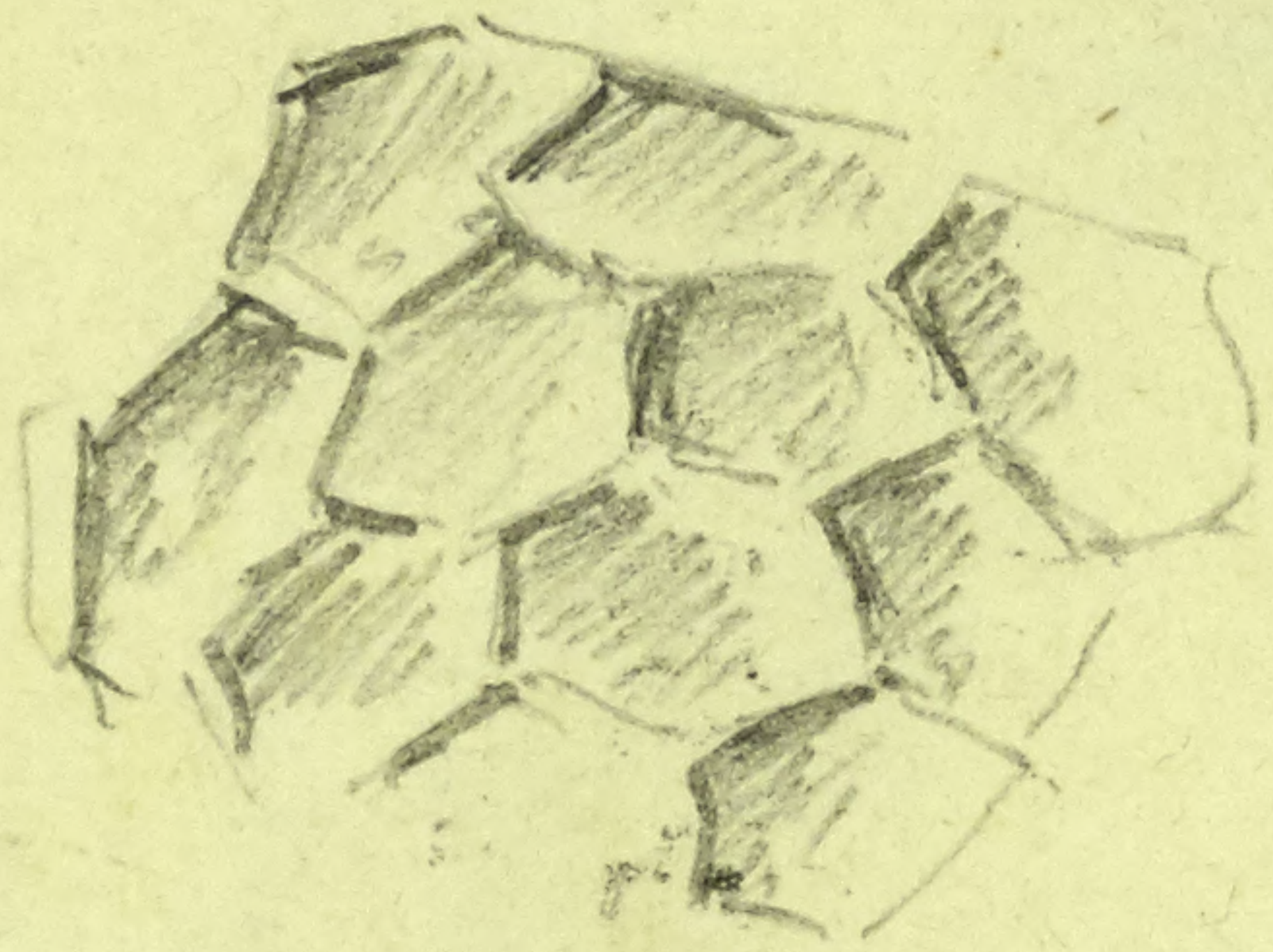
34/30 = 1.1 mm

x30



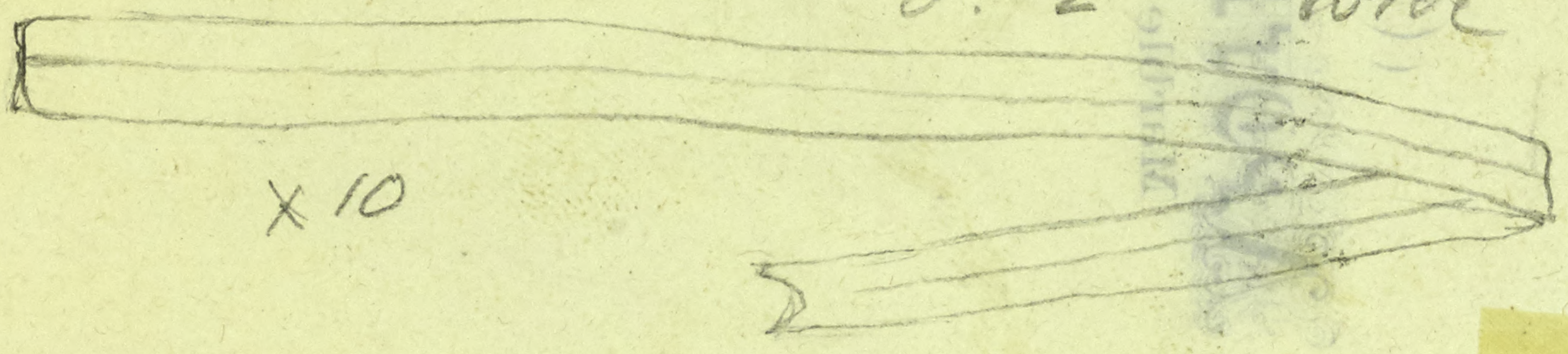


top view of same
from 'Hannover', Scheele 805
in Herb. Engelmann.
a little sharper carinate
than Sardinian plant



x150 surface of
nut coarsely
reticulated

12 mm. long. 1/2 mm wide



x10

0 1 2 3 4 5 6 7 8 9 10
cm
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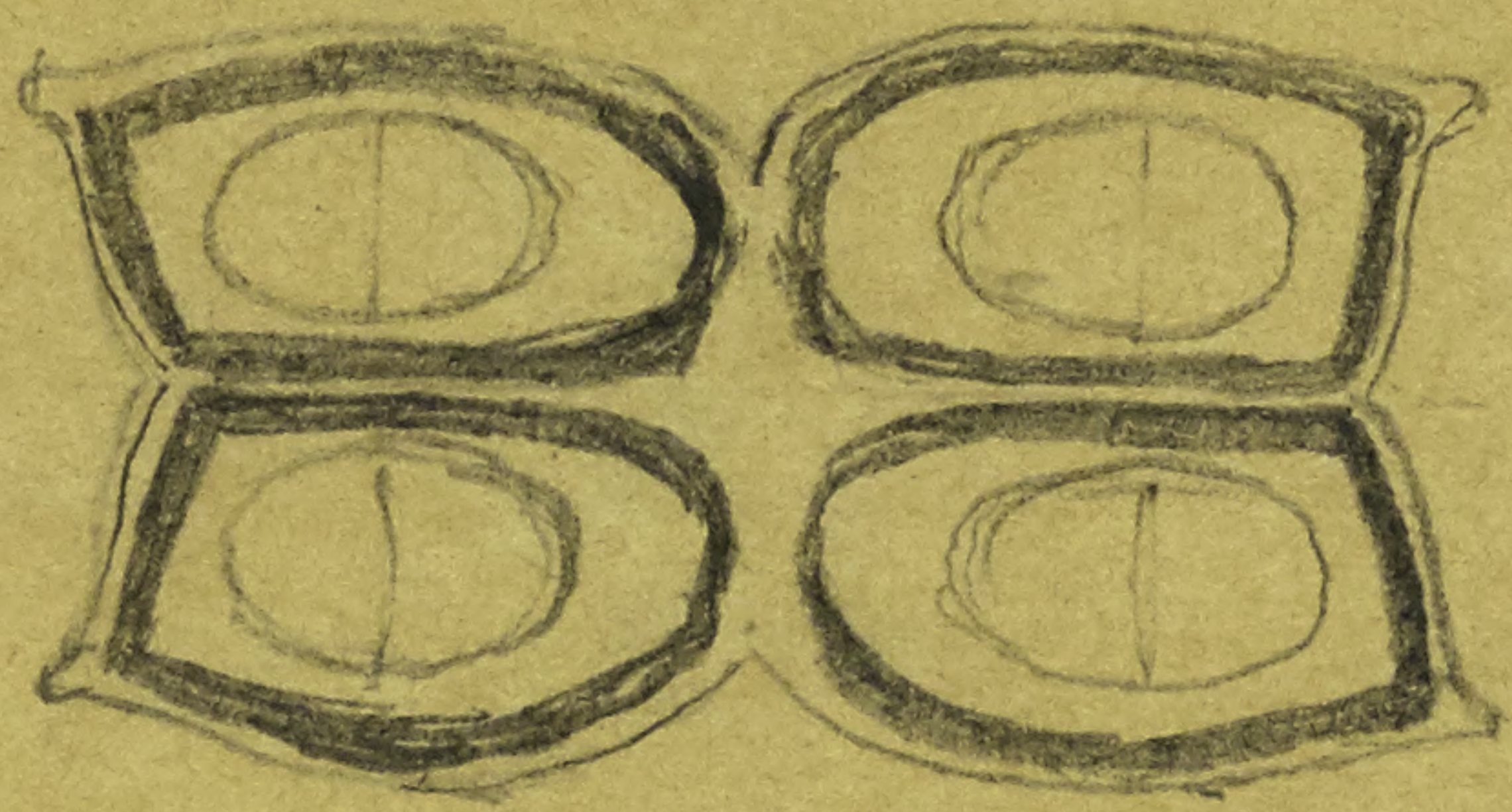
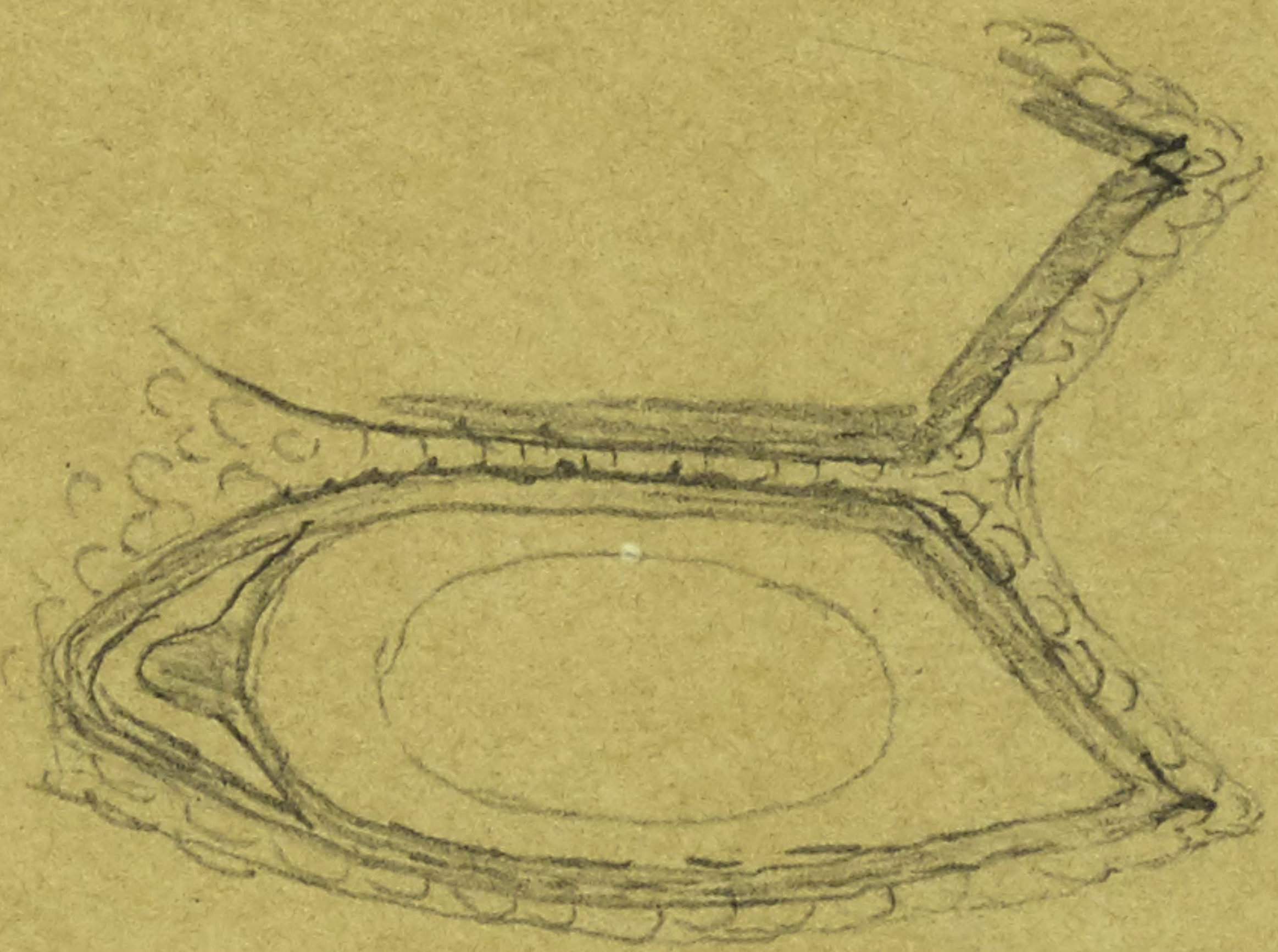
Call. hamulata Nov 6 1864

Fries, Sweden

lower section

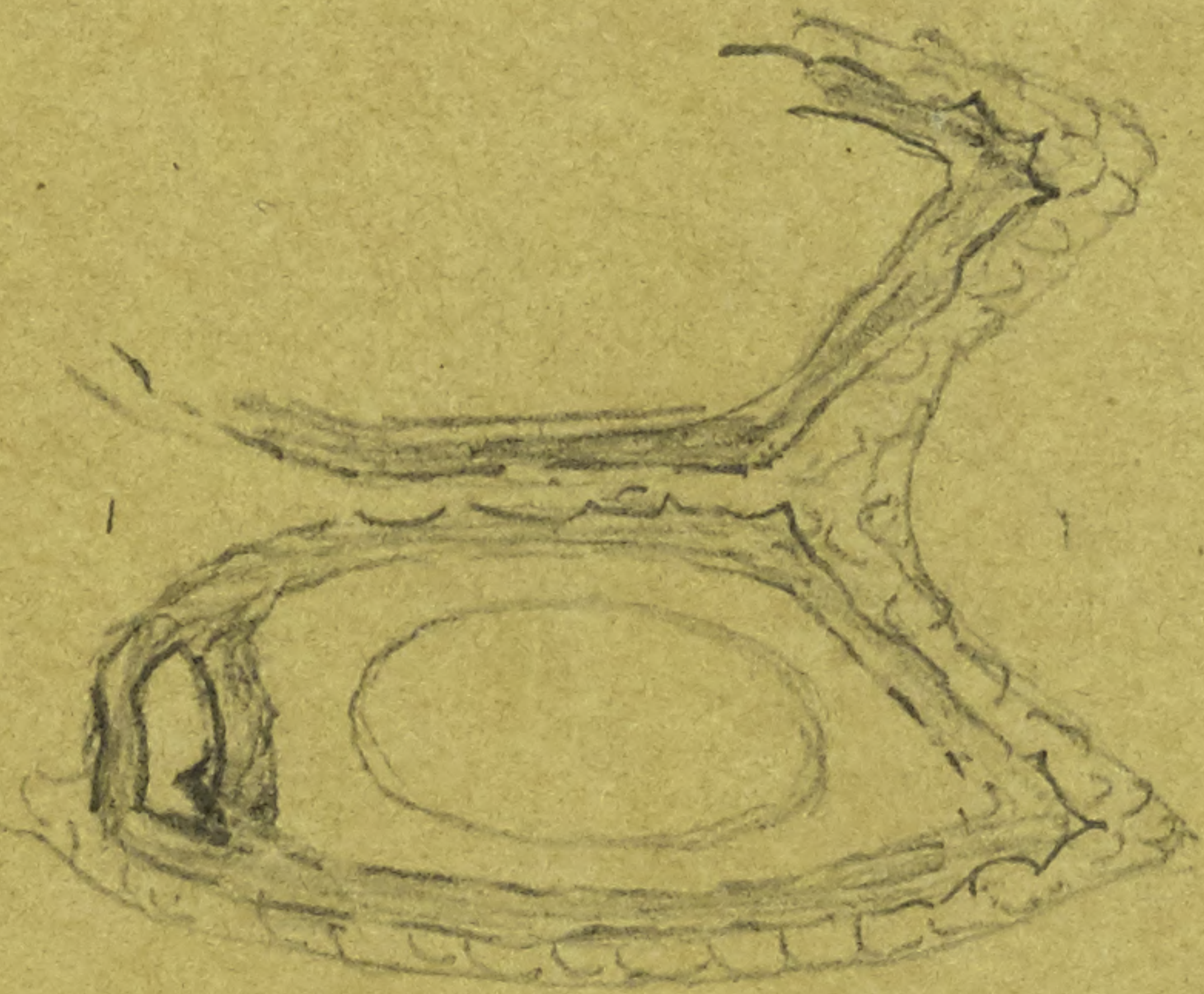
x30.





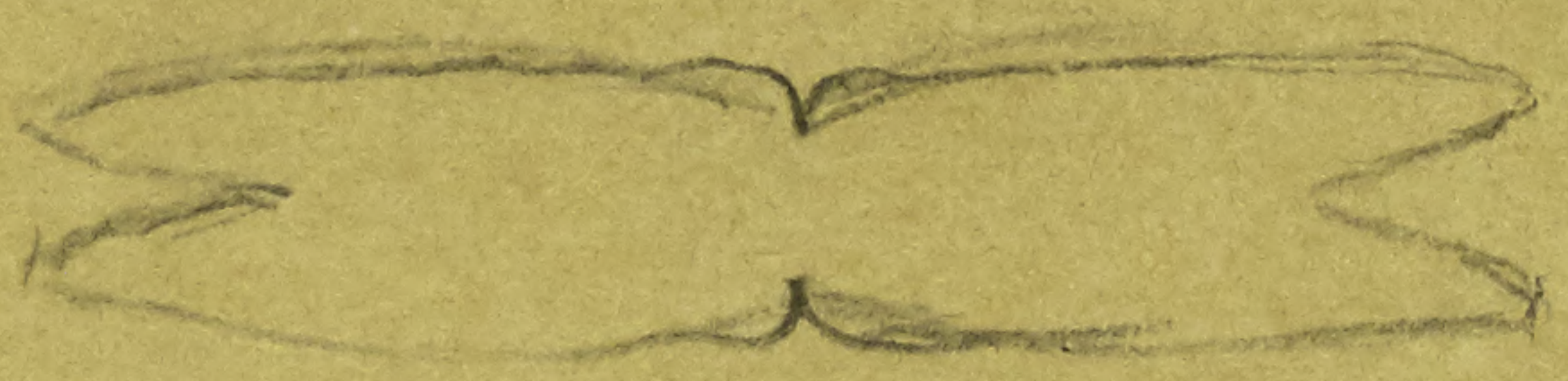
next below

x60

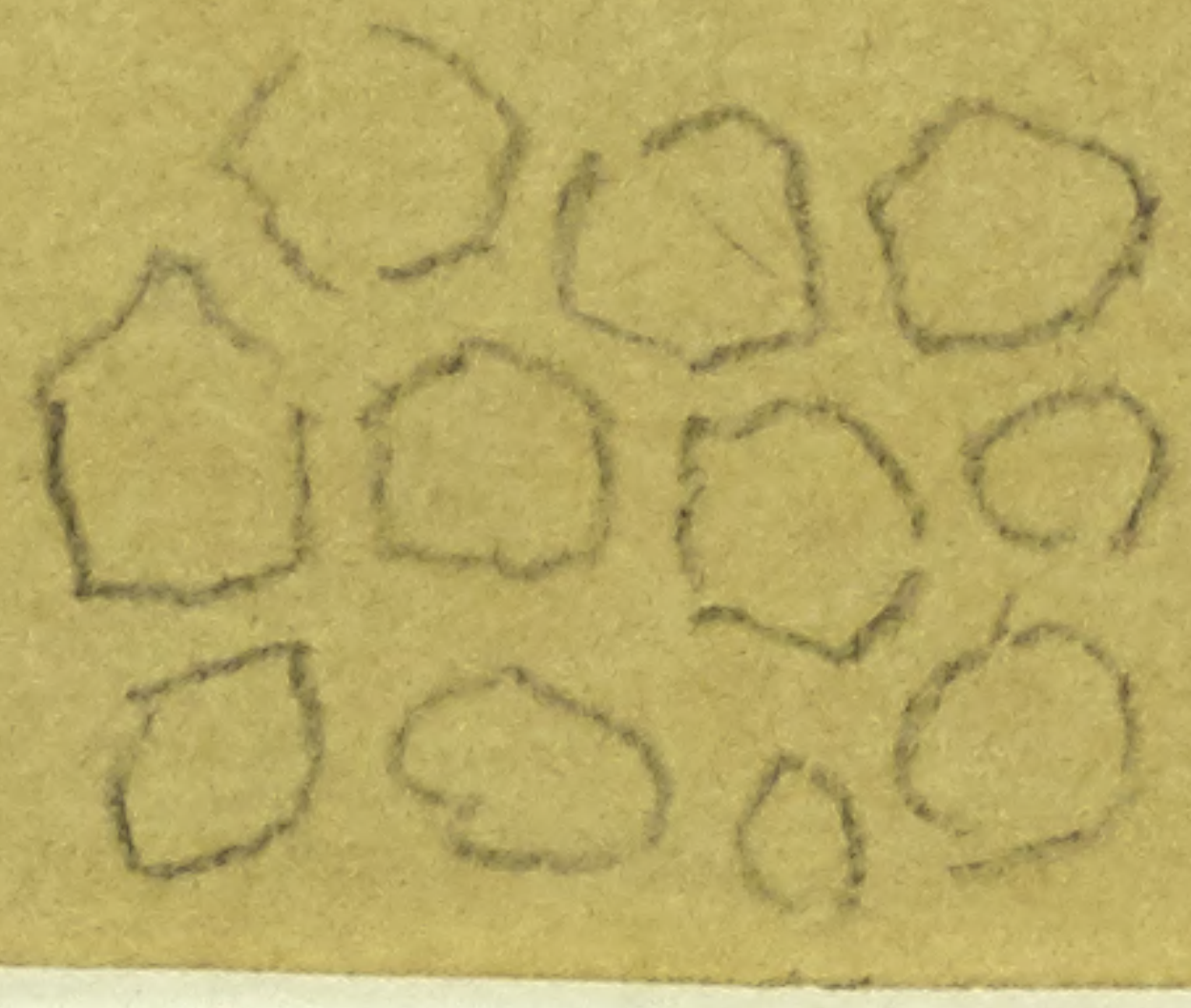


uppermost section

x30



sect. of very yg fruit
to compare with C. truncata



surface
x 150

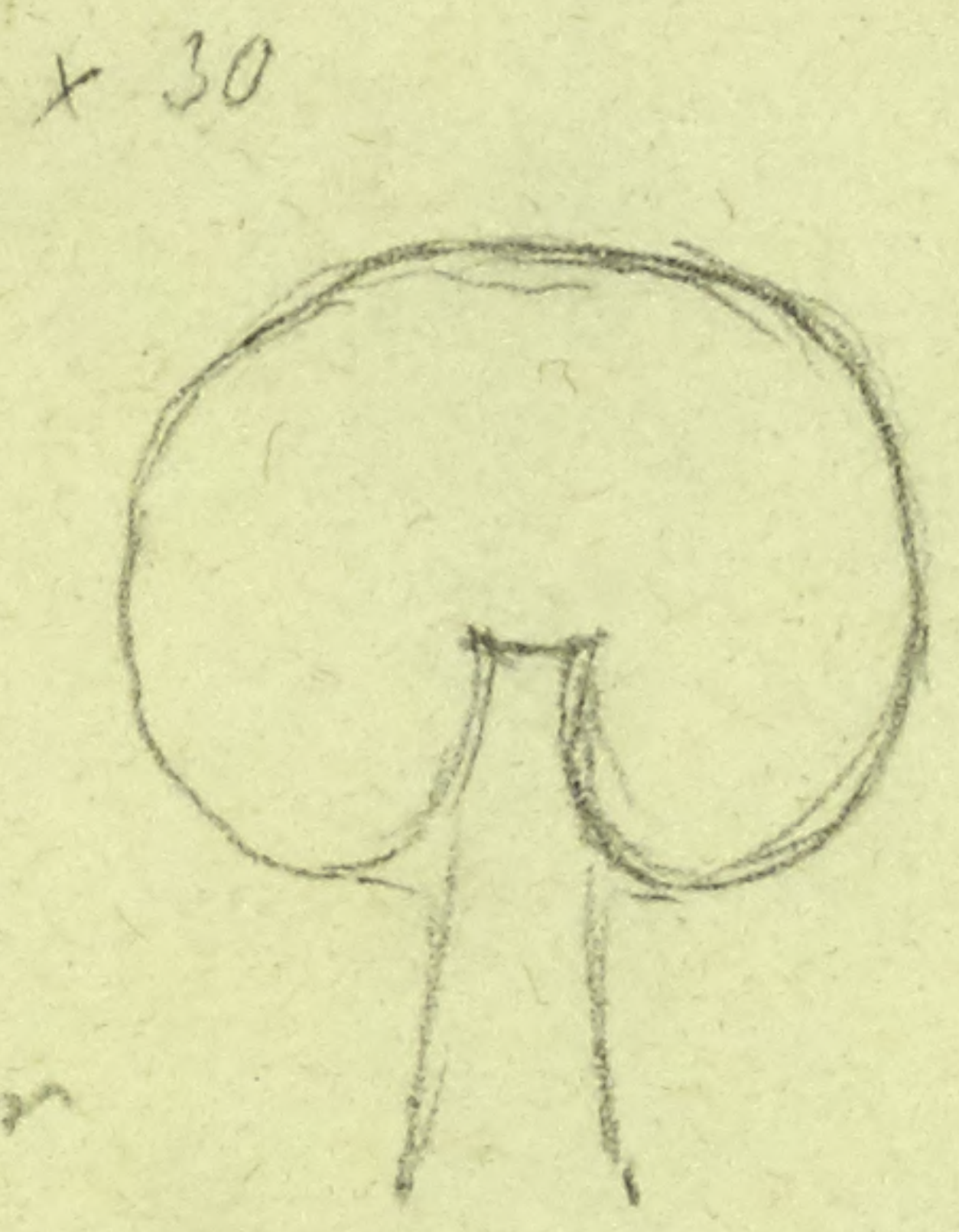
977

**Alex. Leitch,**
APOTHECARY & CHEMIST,
Cor. 4th & Olive Sts., St. Louis.

Call. hamulata
var calophylla

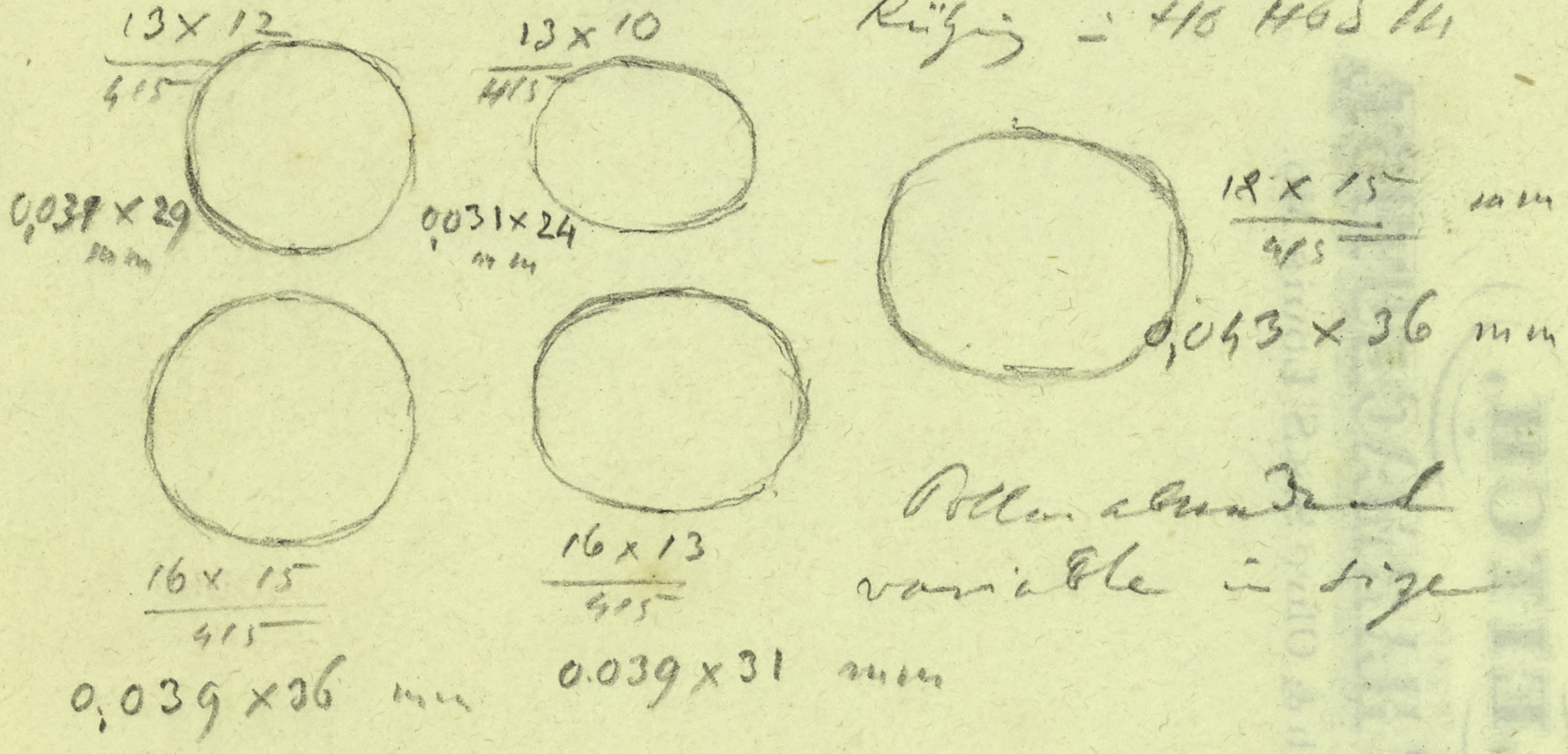
Jan 24 1865

Kützing = 410 HGB M



anther

16/30 = 0,5 mm


13 x 12 / 415
0,031 x 29 mm
13 x 10 / 415
0,031 x 24 mm
18 x 15 / 415 mm
0,043 x 36 mm
16 x 15 / 415
0,039 x 36 mm
16 x 13 / 415
0.039 x 31 mm

Pollen abundant
variable in size

978

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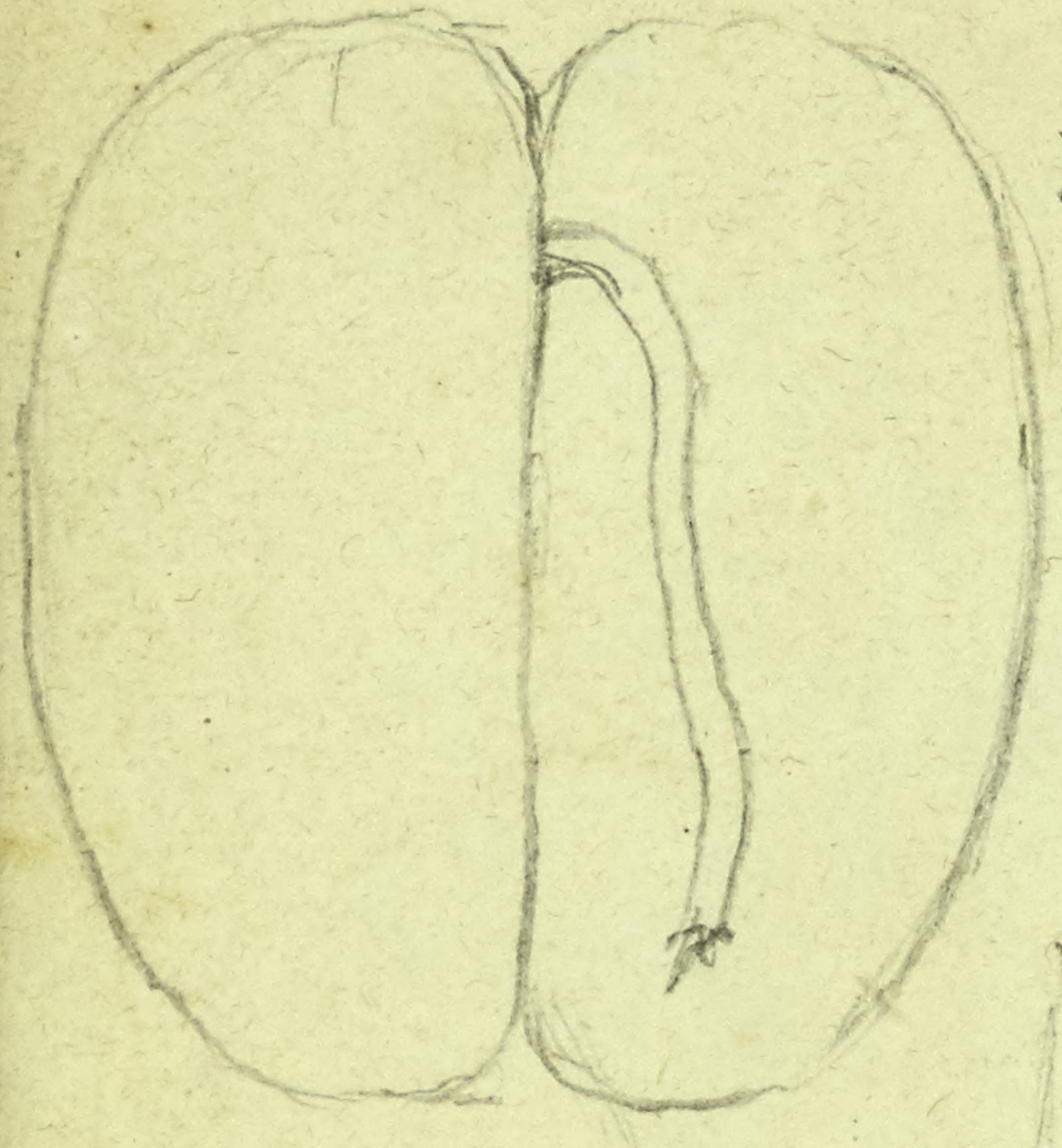
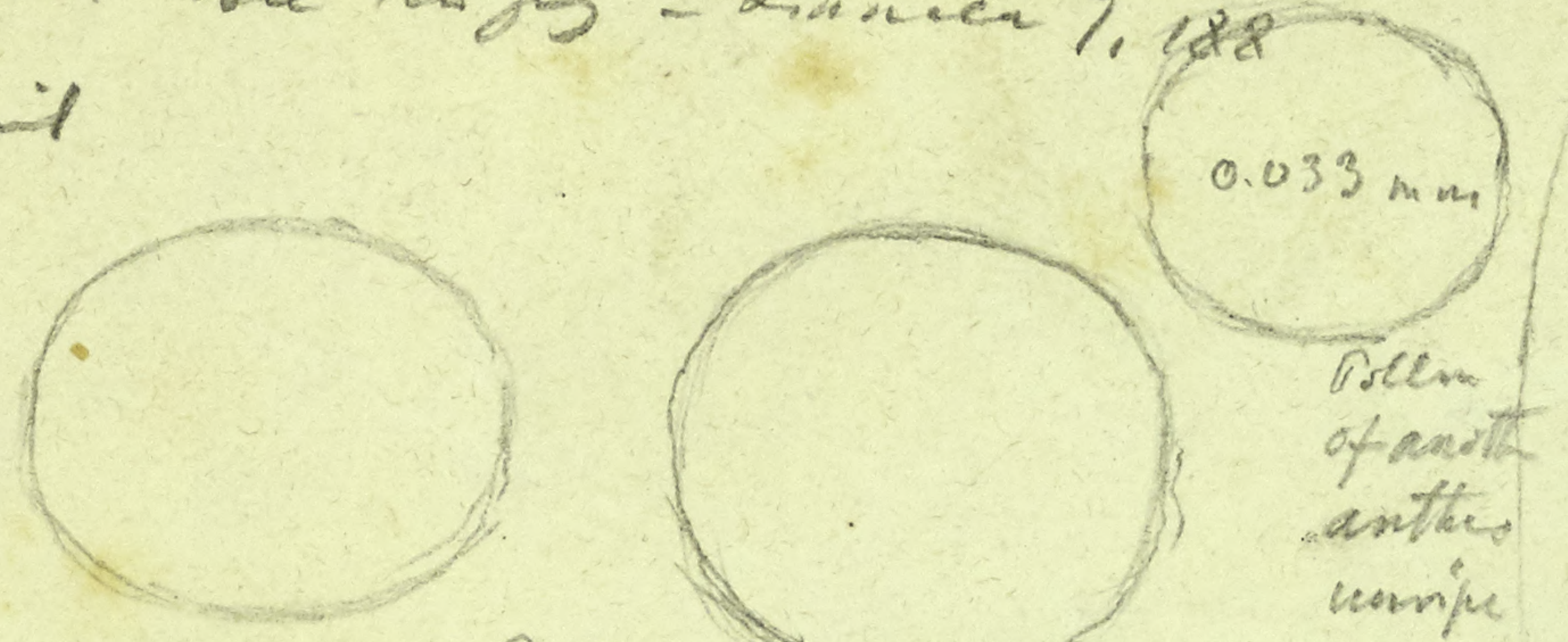
APOTHECARY & PHARMACEUTIST,
Marble Building Cor. Fourth & Olive Sts. St. Louis, Mo.

Callitriche [illegible] Nov 5 1864

var ovalifolia, Kützing

about the direction of stigmata see Kützing – Linnaea 7. 188 in Herb Hd Miss

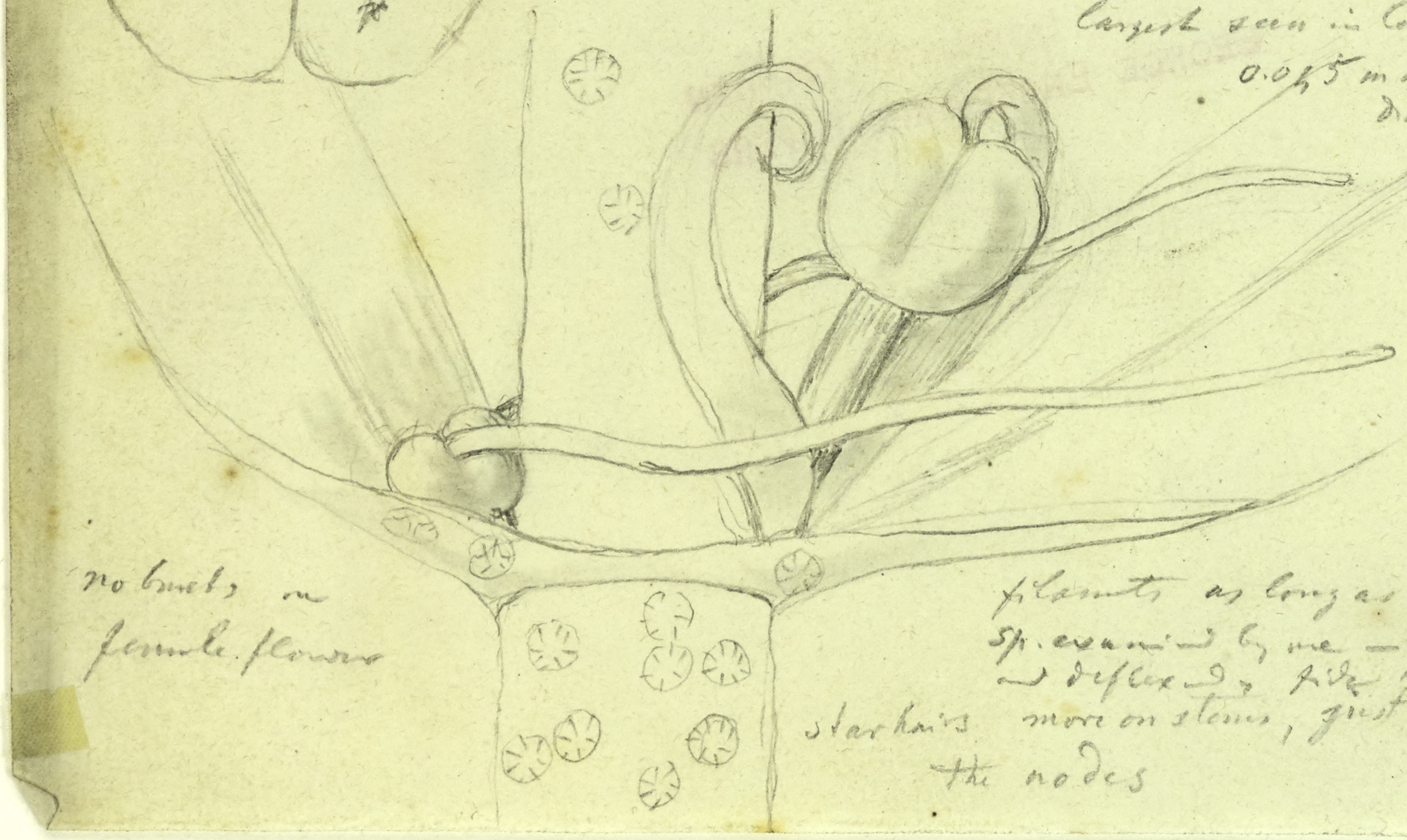

x30 young fruit
33 x 36
30
= 1.1 x 1.2
m.m.

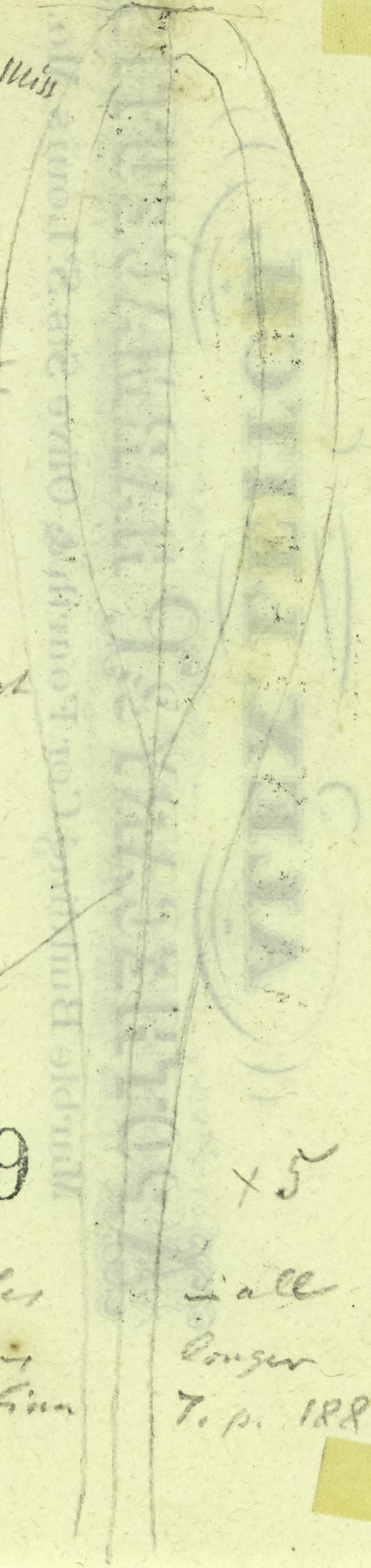

0.033 mm
Pollen of another anther unripe

Pollen grains x 415

Largest seen in Callitriche

0.045 mm in longest diameter





979

no bracts on female flowers

filaments as long as bracteoles in all

Sp. examined by me — sometimes longer

and deflexed, fide Kützing Linn 7. p. 188

starhairs more on stems, just under the nodes

**ALEX. LEITCH,**

**APOTHECARY & PHARMACEUTIST,**

Marble Building Cor. Fourth & Olive Sts. St. Louis, Mo.

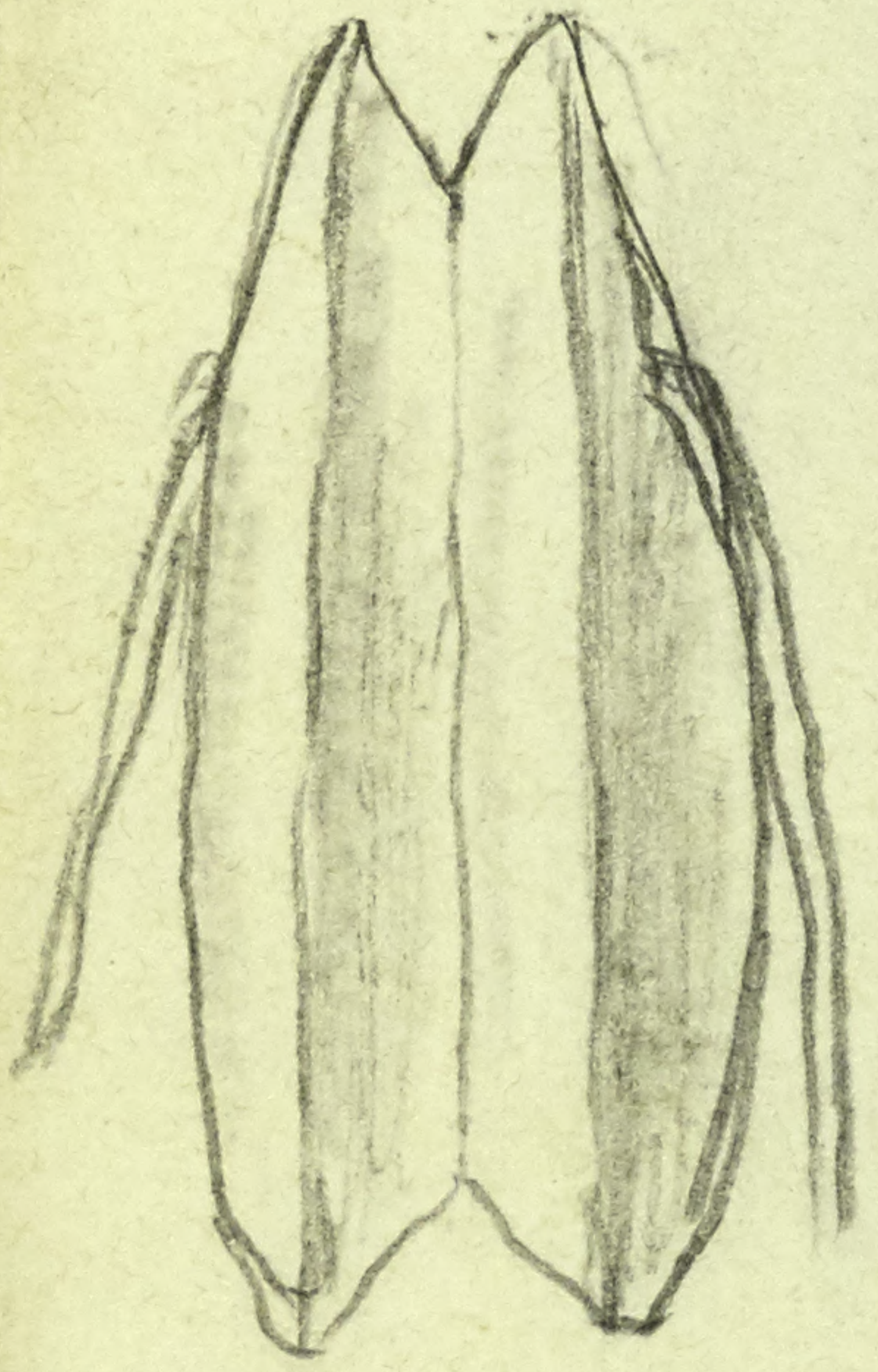
Callitriche hamulata

Nov 3 1864

"C. autumnalis var spatulaefolia Kützing in Hb. Hook. Missouri,

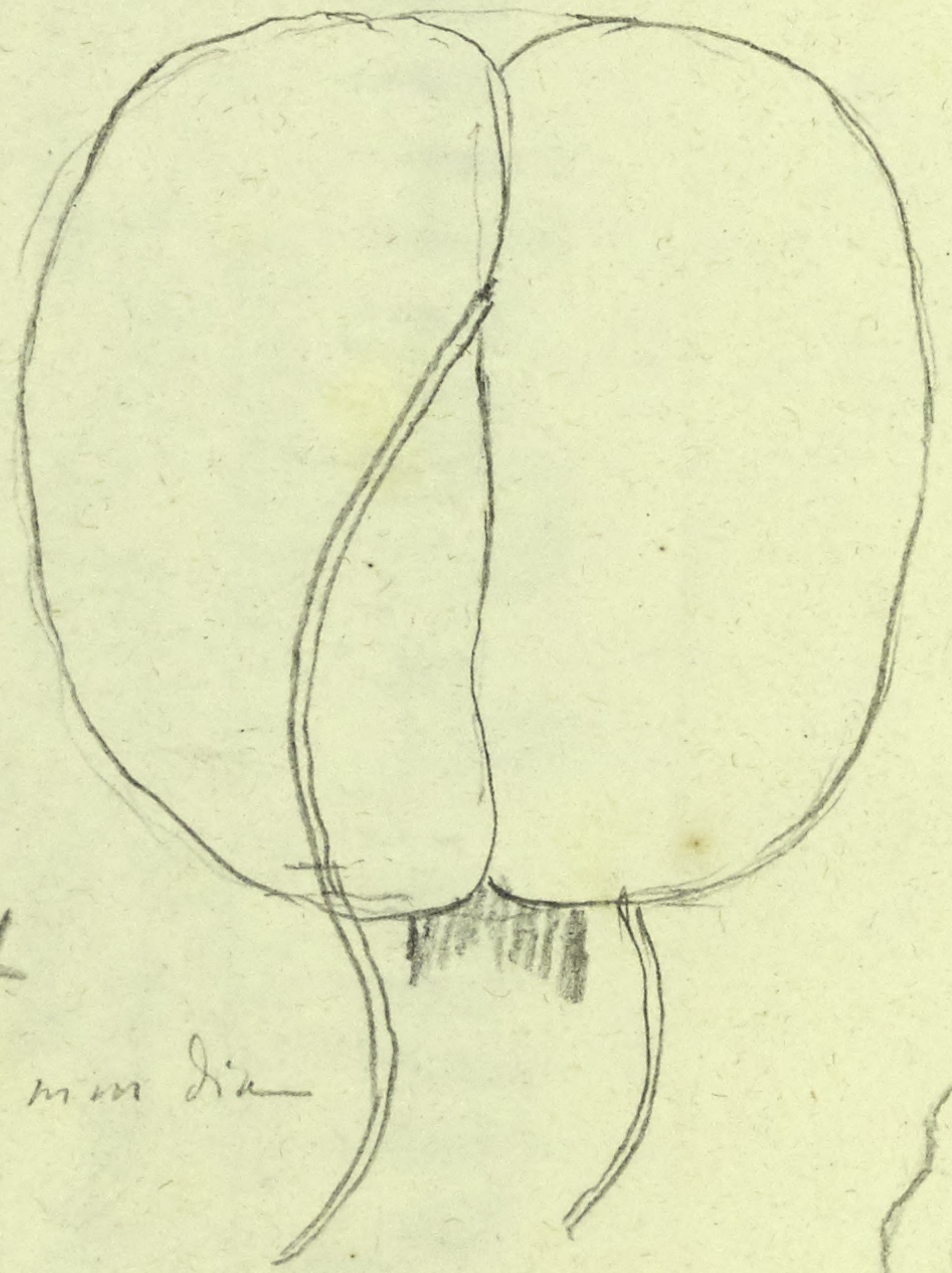
see Linnaea 7. 190 (1832)

980



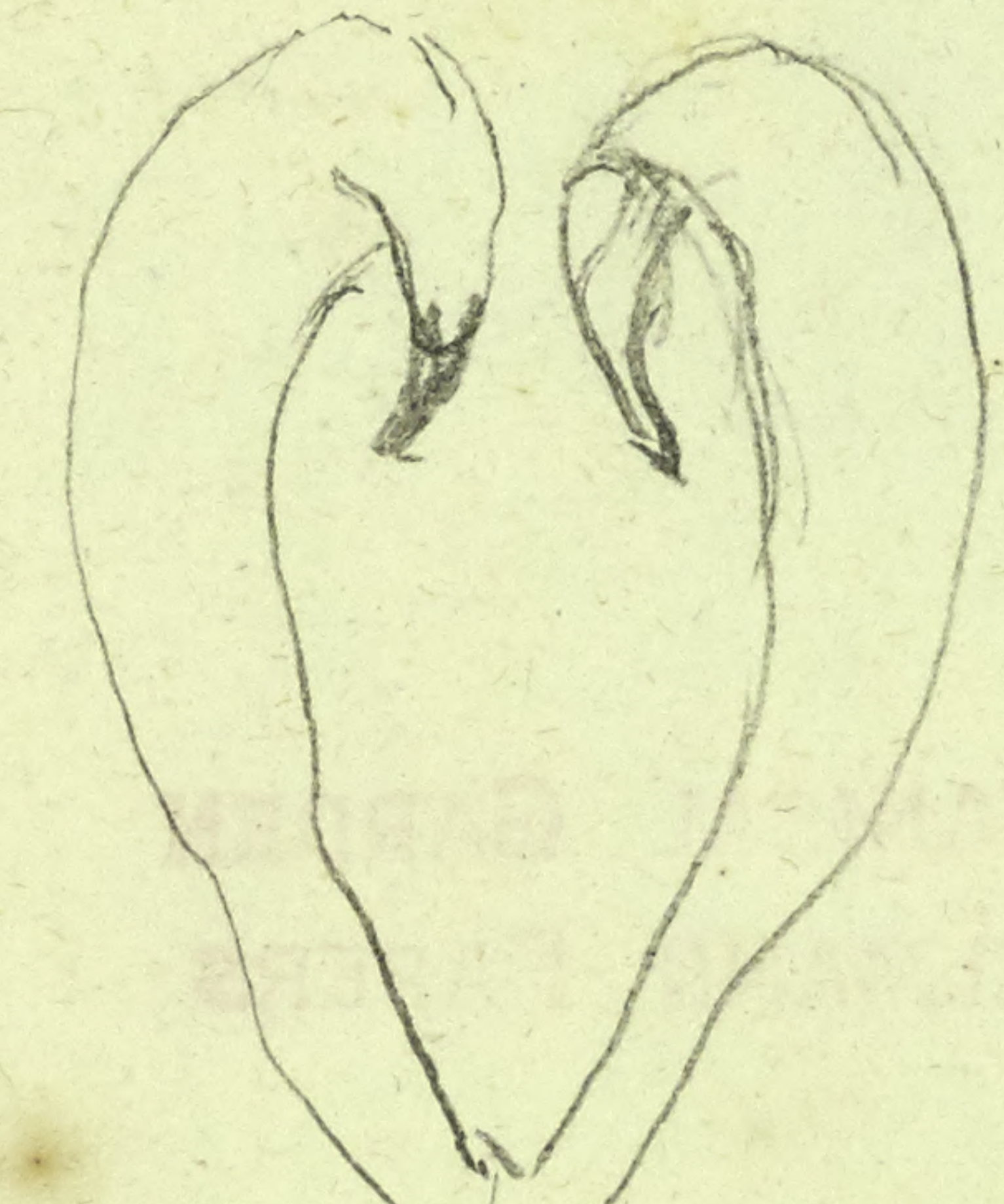
young unripe

× 30



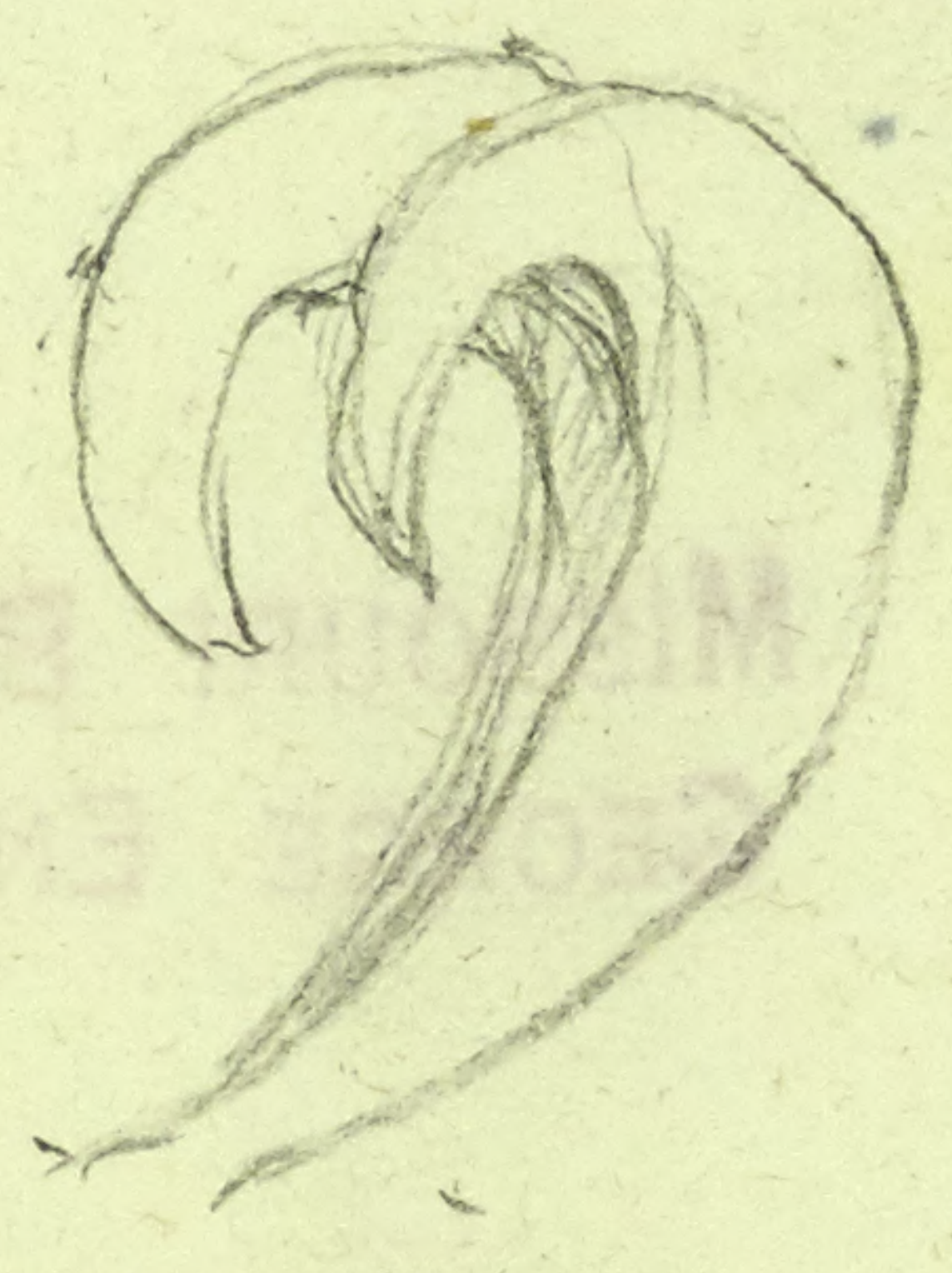
fruit

1.3 mm dia

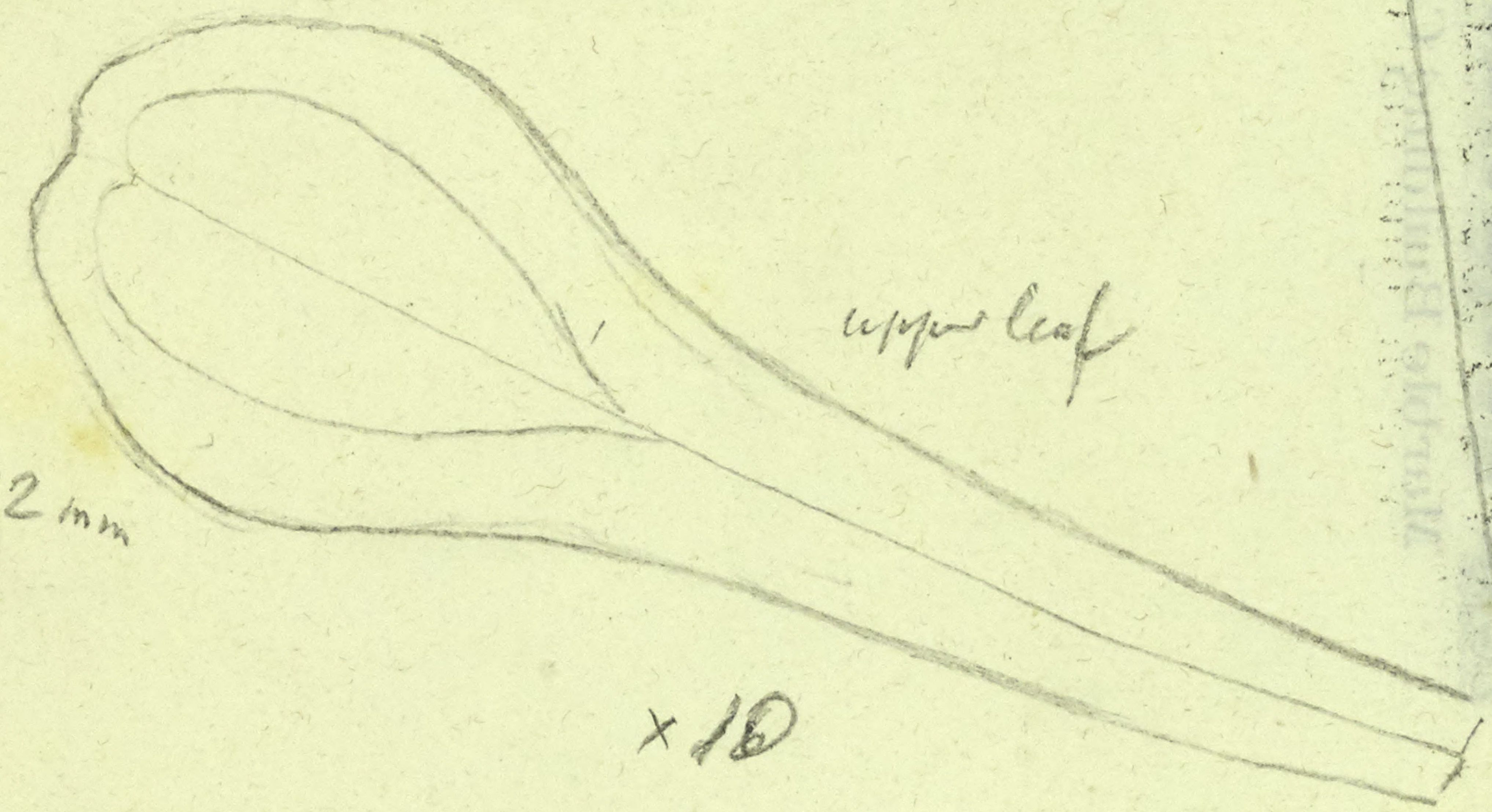


~~bract~~ bracts

× 30

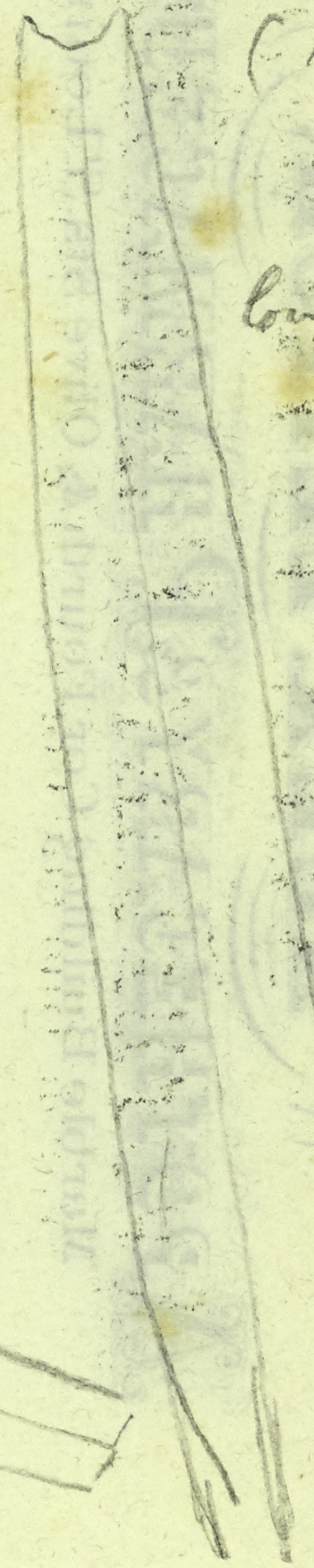


bracts



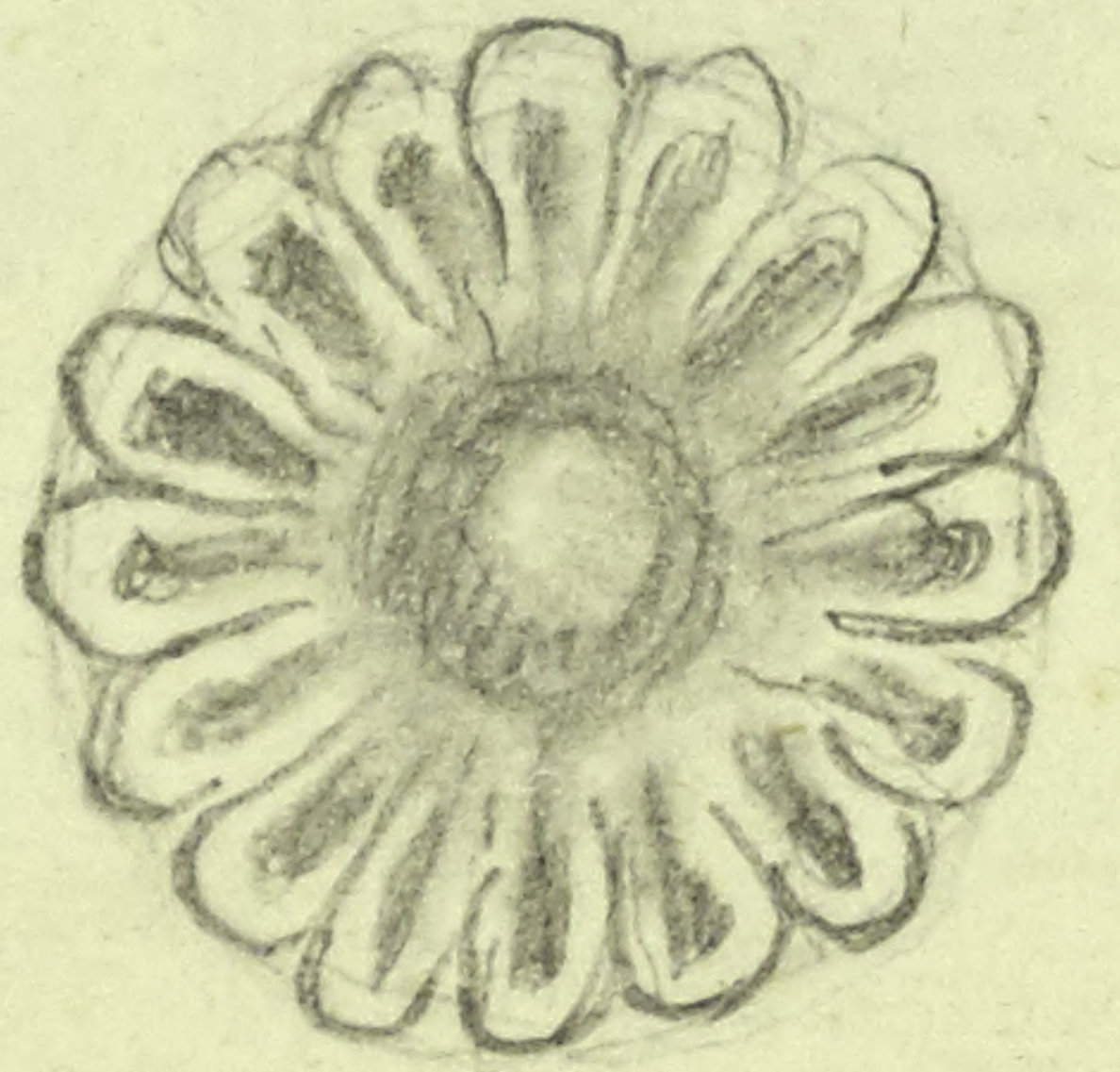
upper leaf

× 10



lower leaf

× 10



$\frac{18}{150}$ = 0.12 mm

star-hair × 150

on stem especially under the nodes

0 1 2 3 4 5 6 7 8 9 10
cm
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**APOTHECARY & PHARMACEUTIST,**

Marble Building Cor. Fourth & Olive Sts. St. Louis, Mo.

---

**Leitch & Corlies**

**DRUGGISTS**

South-west Corner Fifth and Market Streets

0 1 2 3 4 5 6 7 8 9 10 cm
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MISSOURI BOTANICAL GARDEN

x 30

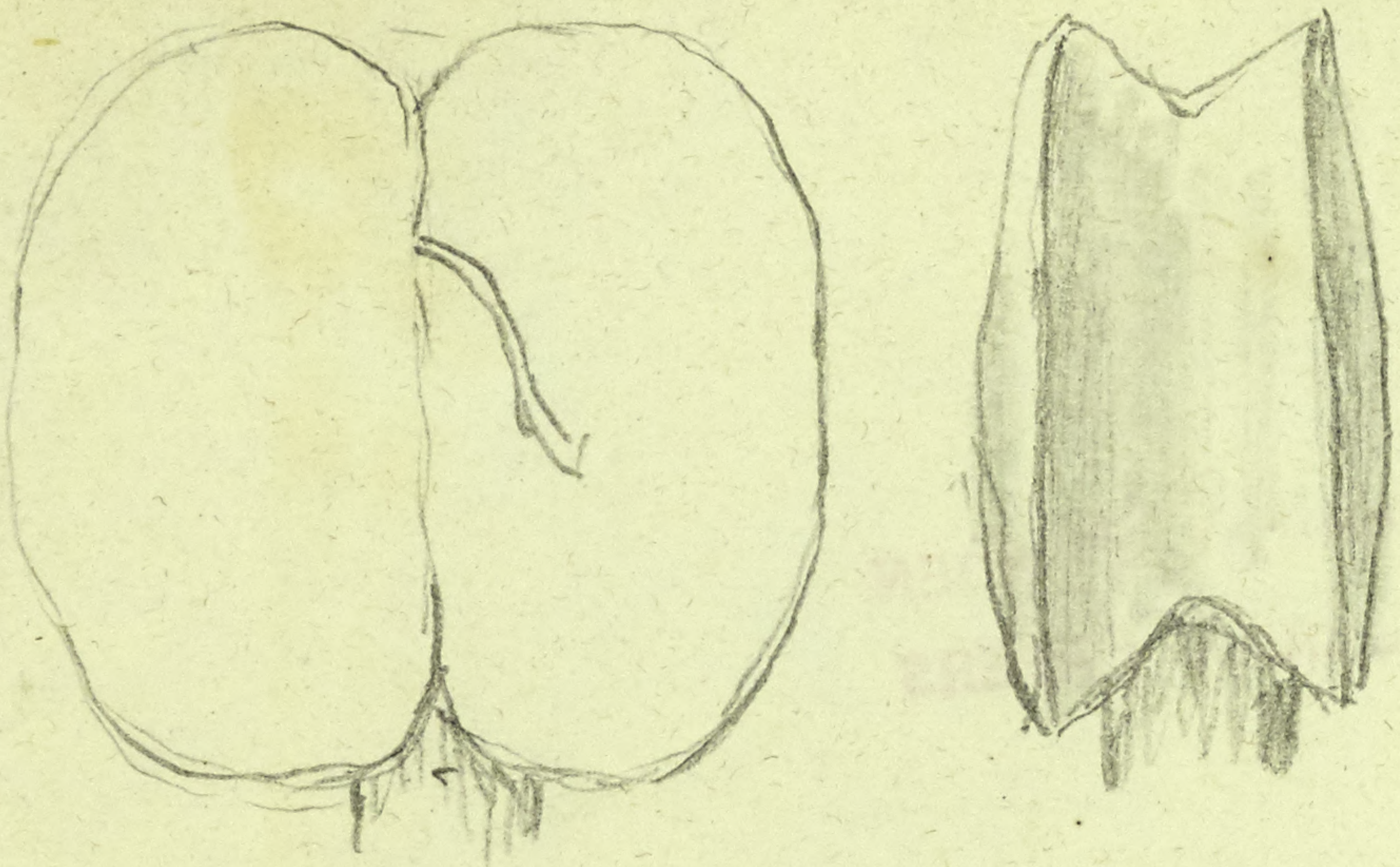
Callitriche hamulata
var. brachyphylla

Kützing in Hb Bernhardi
now Hb. H B Mission

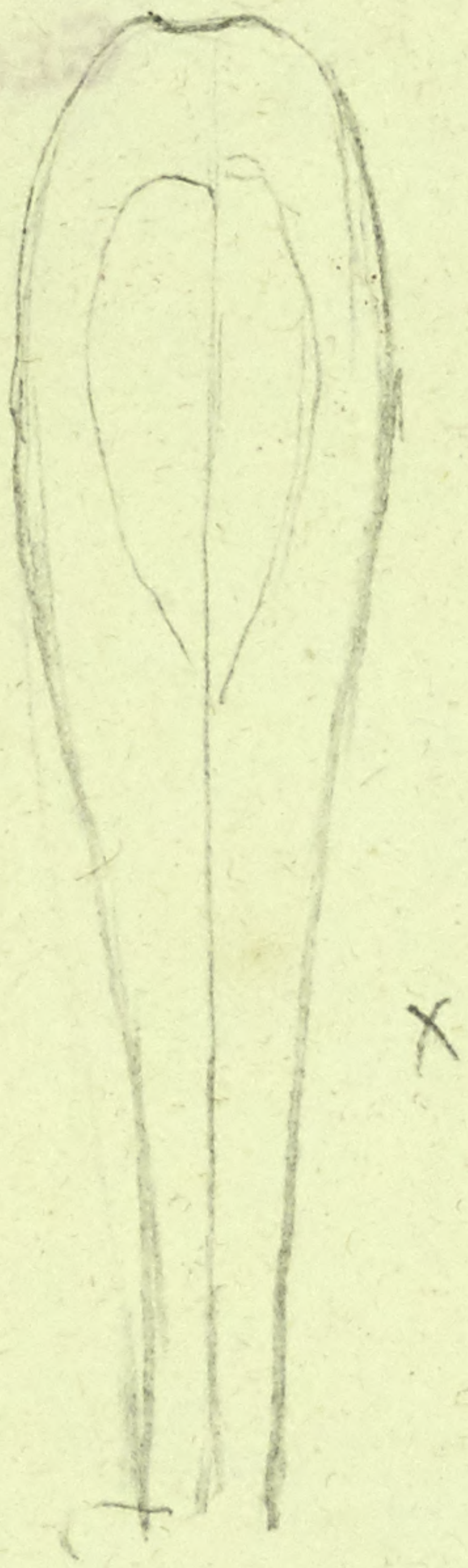
Linnaea VII. p 192

forma terrestris

Nov 3 1864



$\frac{32 \times 34}{30}$ = 1.0 × 1.1 mm



x 10

981

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0 1 2 3 4 5 6 7 8 9 10
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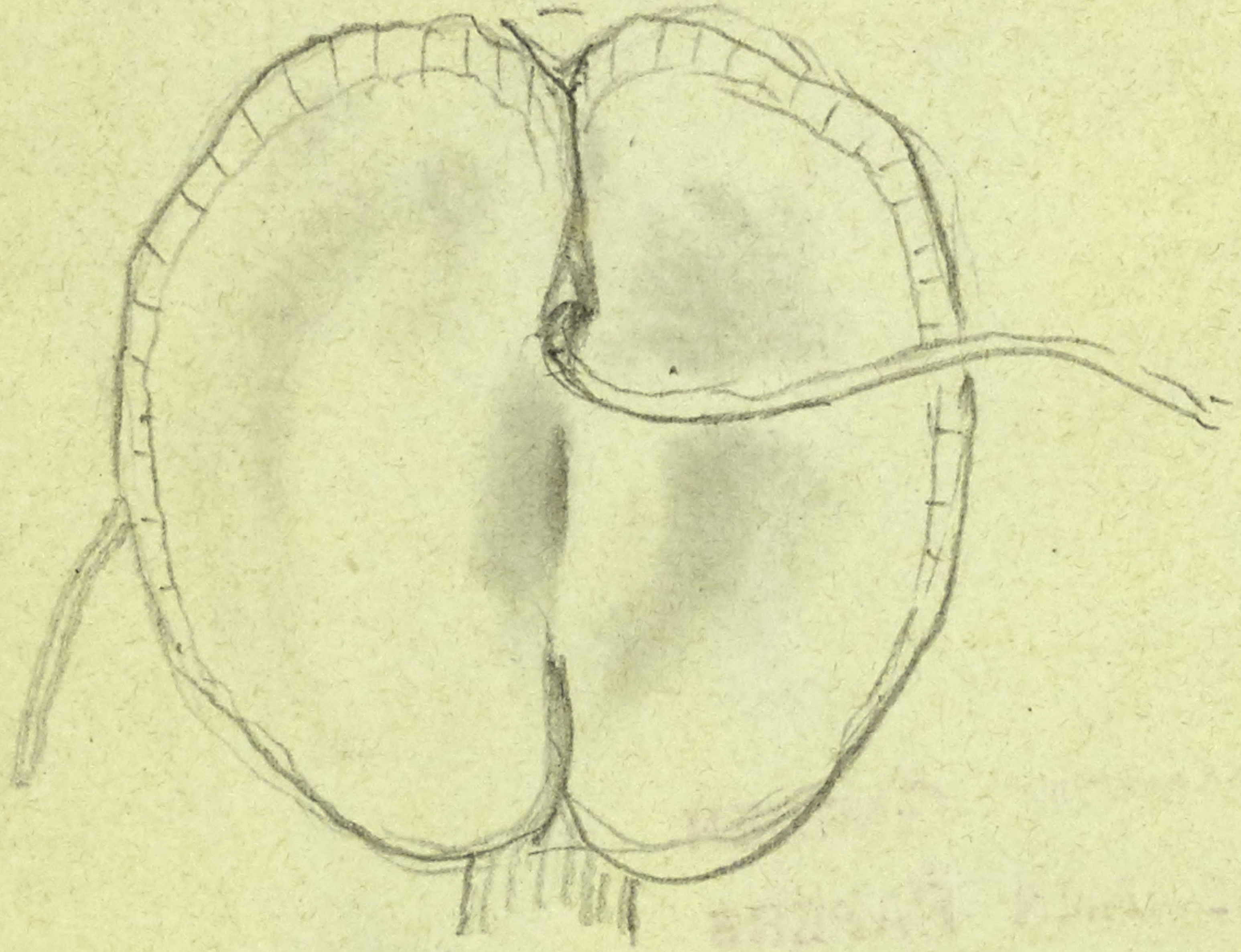
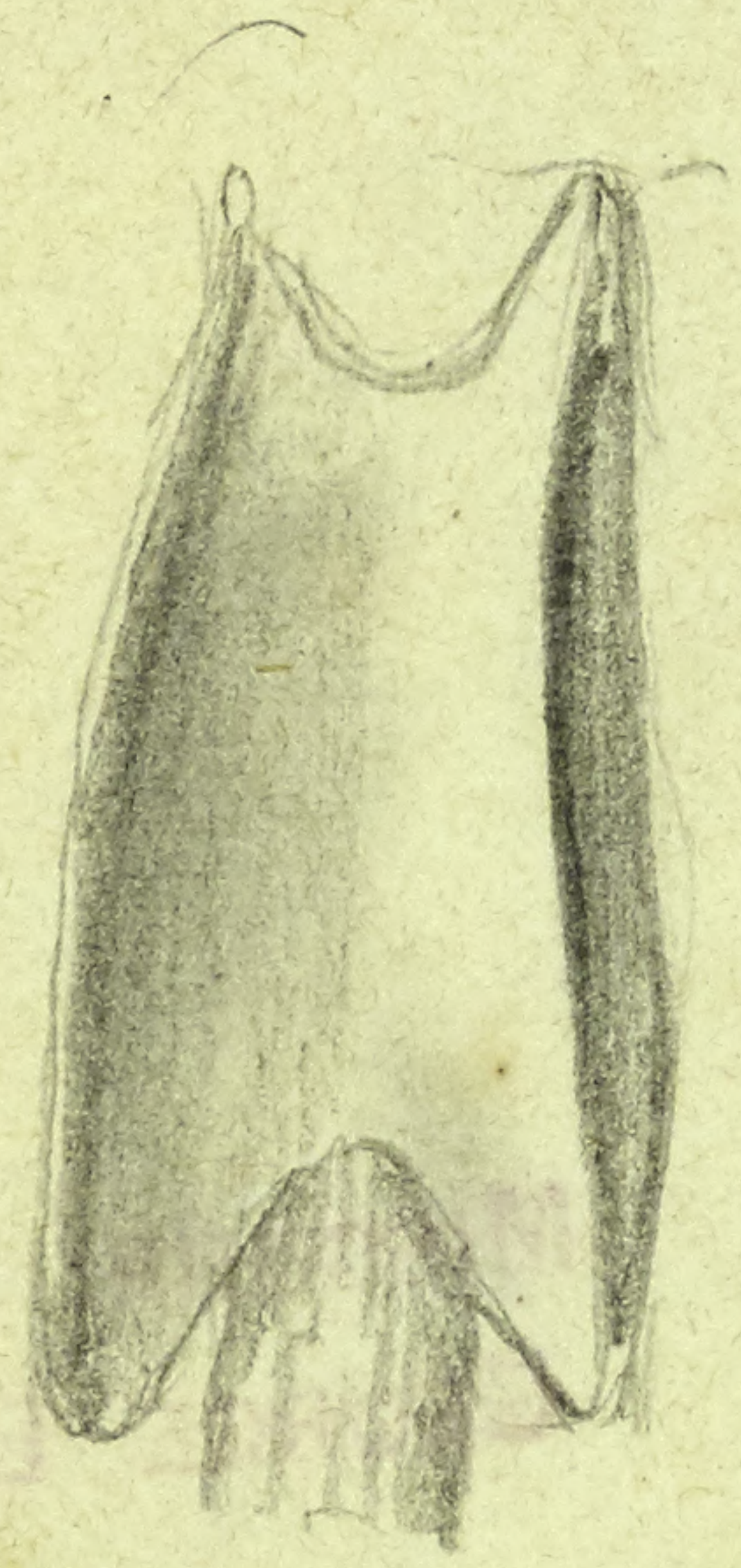
"Call. hamulata Kütz" 29 June 1864
fide Fries, Sweden

982

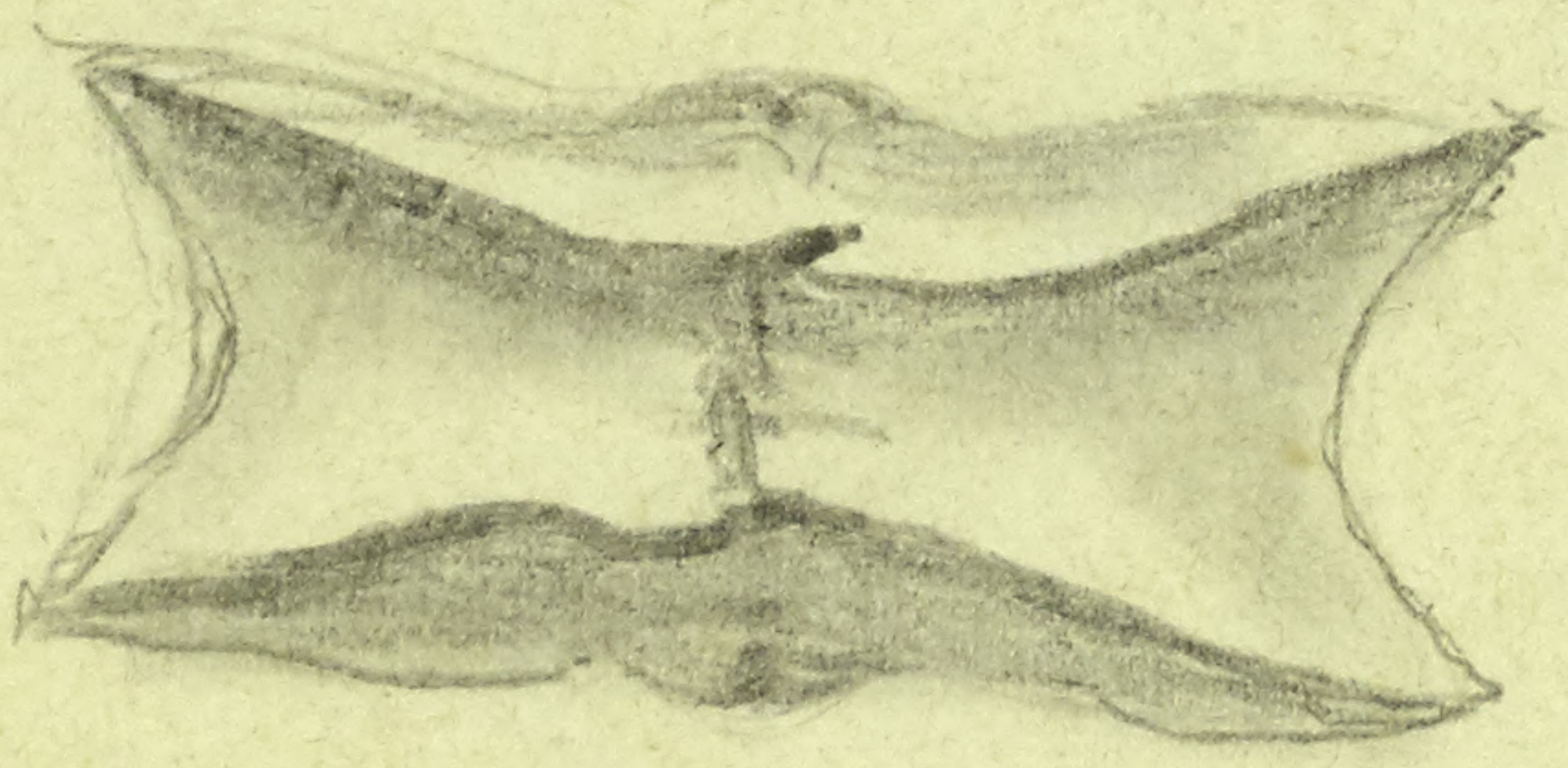
x30

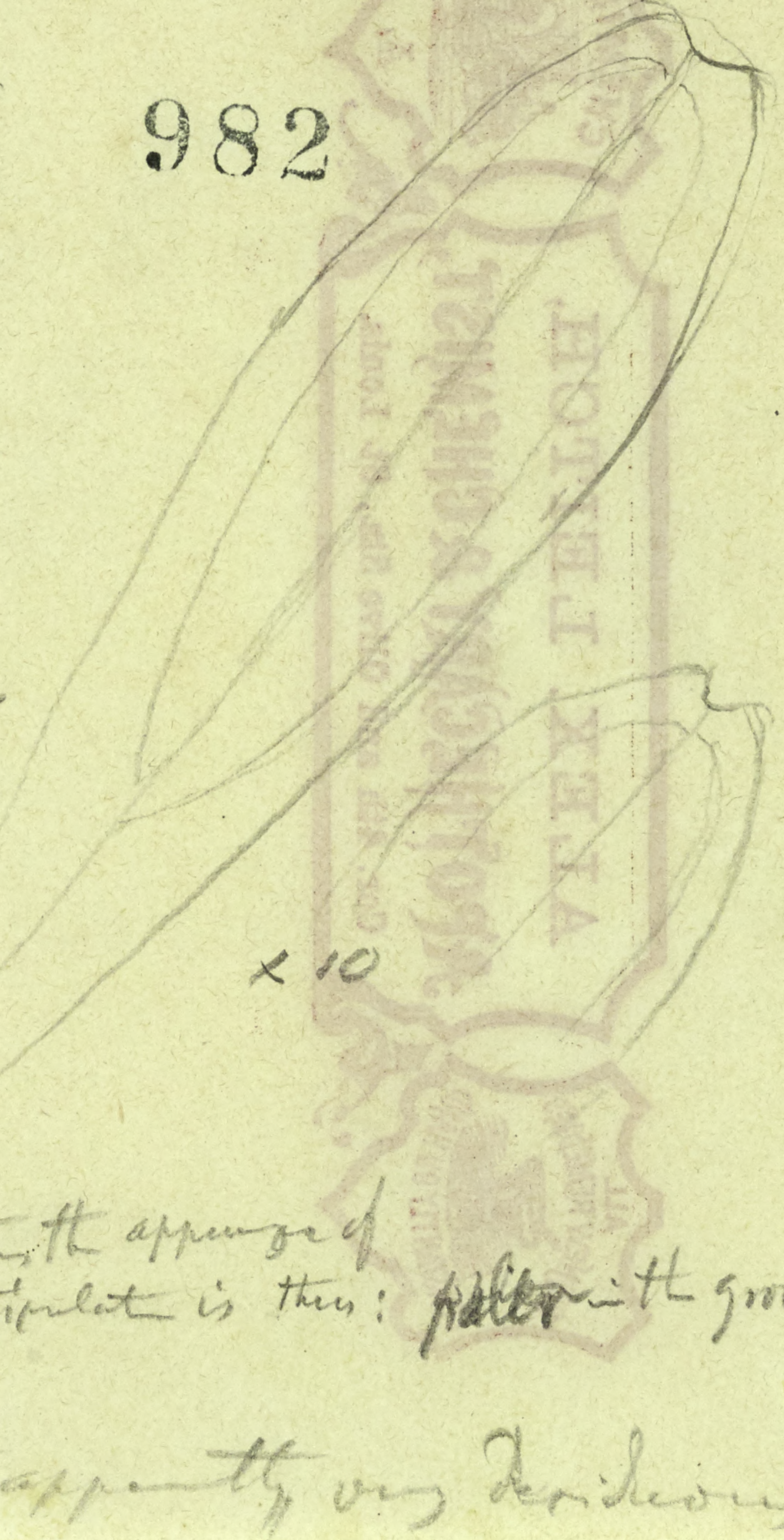


margin radiated, visible only when soaked



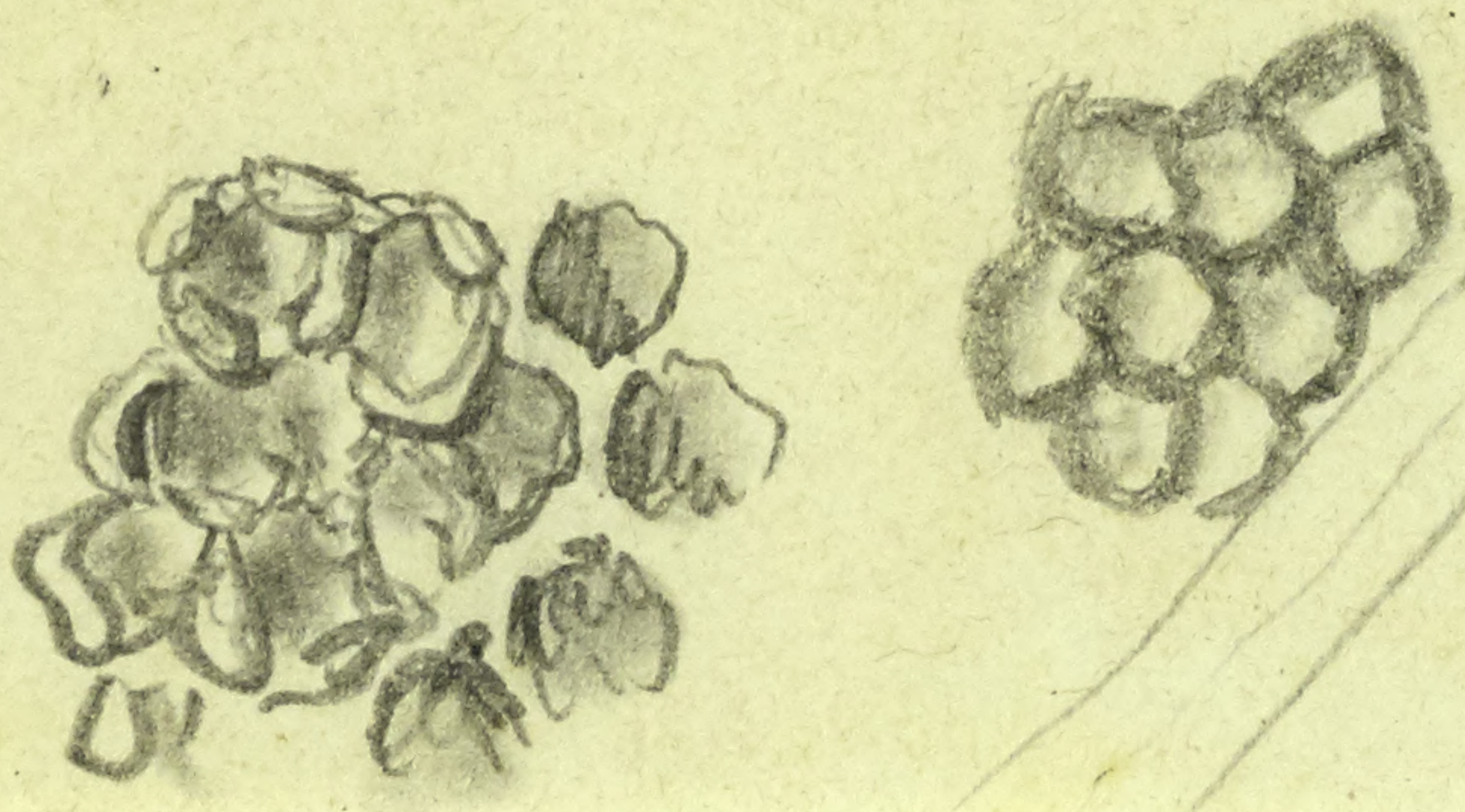
fruit 1.0–1.2 mm diameter





x10

x150



reticulat of nut

Sometimes the appearance of the reticulation is thus: pillar with the groove

Fruits apparently very deciduous

0 1 2 3 4 5 6 7 8 9 10
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CHEMIST

ALEX. LEITCH,
APOTHECARY & CHEMIST,
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ALL THE NEW REMEDIES CONSTANTLY ON HAND